SECURITY DOOR AND HARDWARE REQUIREMENTS

As a minimum standard for populations of low security level and above:

Doors servicing spaces indicated as secure in the Secure Construction Requirements Matrix shall be Detention Grade and manufactured and tested in accordance with Hollow Metal Manufacturers' Association HMMA standard 863-98 - Guide Specifications for Detention Security Hollow Metal Doors and Frames. Door face sheets shall be 12 gauge. Hollow metal frames shall be 12 gauge minimum.

Locks for doors servicing spaces indicated as secure in the Secure Construction Requirements Matrix shall be Southern Steel or Folger Adam 80 series paracentric deadbolt locks (or equal). Locks shall be pressure sensitive and have 6 levers.

SECTION 11191 - SECURITY METAL DOORS AND FRAMES

GENERAL

A. The work provided on this Project consists of security metal doors, frames, and related items necessary to complete the work indicated on the drawings and described in these specifications. Include transoms, sidelights, borrowed lights, and similar formed hollow metal work indicated in secure areas. Work shall also include the following items:

1. Embedded items, such as weld plates and embedded subframes.

2. Hardware enclosures interconnected with conduit, elbows, and connectors where electrically operated hardware is required.

B Provide materials meeting the following criteria:

1. ASTM A366M-91 — Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.

2. ASTM A627 — Standard Specification for Homogeneous Tool-Resisting Steel Bars for Security Applications.

3. ASTM B117-94 — Standard Test Method of Salt Spray (Fog) Testing.

4. ASTM D1735-92 — Standard Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus.

5. AWS D1.1 — Structural Welding Code: Steel.

6. HMMA 862-87 — Guide Specifications for Commercial Security Hollow Metal Doors and Frames

7. HMMA 863-98 — Guide Specifications for Detention Security Hollow Metal Doors and Frames

C It is desired that the detention equipment subcontractor shall provide a "turnkey" package with a single source of responsibility for the following sections:

1. Security Metal Doors and Frames
2. Detention Hardware
3. Security Glazing

4. Detention Equipment
5. Security Fasteners
6. Security Access Doors

D. DETENTION EQUIPMENT SUBCONTRACTORS

1. Service: The detention equipment subcontractor shall employ a factory-trained and factory-approved service organization. This organization shall have experience in servicing and maintaining this equipment.

2. Service organization shall submit a proposal to the Contracting Officer for service after the warranty period.

E. CERTIFICATION: Security hollow metal manufacturers shall submit to the Contracting Officer test reports and documentation by an independent testing laboratory in accordance with ASTM F 1450 certifying compliance with HMMA 863 Section 1.06. Security grades and test load requirements shall comply with HMMA 863-98, Section 1.06, Table 1 grades 1 and 3. Required tests include:

1. Door Assembly Impact Test
2. Door Static Load Test
3. Door Rack Test
4. Door Edge Crush Test
5. Bullet Resistance Test
6. Removable Glazing Stop Test

F. Labeled Doors and Frames: Where required by the project, furnish doors and frames bearing the label of Underwriters Laboratories or Factory Mutual Engineering Corporation, indicating the applicable rating and wall opening classification specified.

G. Provide factory-trained representatives to demonstrate equipment and instruct Contracting Officer's designated personnel in operation, repair, and maintenance of security doors and frames.

H. WARRANTY: The subcontractor shall warrant his material and workmanship on this project for a period of 1 year from the date of Substantial Completion. The subcontractor agrees to repair or replace any defective materials; and to correct any defective security work, when given written notice by the Contracting Officer during this warranty period. The subcontractor also agrees to respond to these notices within 5 calendar days and make all repairs as required for proper operation during this warranty period.

I. Doors shall be shipped to prevent damage. Frames shall be shipped with angle spreaders at door opening bottoms. Doors and frames shall be stored on the building site in an upright position, under cover, on wood sills or floors in a manner that prevents rust or damage. Ventilate canvas or plastic covers to prevent moisture traps.

PRODUCTS

A. Provide products meeting the following criteria.

B. Embedded items shall be mild steel shapes and plate and, where required, shall be 5 mm or 6 mm thick, and shall comply with ASTM A366.

C. SECURITY-TYPE HOLLOW METAL DOORS

1. Security-type hollow metal doors shall have a thickness of 50 mm (2") (actual). Doors shall have 3 mm side clearance with proper bevel to operate without binding. Furnish all accessory items as required for a complete installation.

2. Doors shall be custom-made, of the types and sizes shown on approved shop drawings, and shall be prepared for hardware in accordance with the manufacturer's recommendation and the final approved Security Hardware Schedule. Doors shall be constructed using commercial-quality cold-rolled steel that complies with ASTM A366. The steel used shall be free from scale, pitting, coil breaks, or other surface blemishes. The steel shall also be free of buckles, waves, or any other defects caused by the use of improperly leveled sheets. Door face sheet thicknesses shall be 12 gauge.

3. Door edge seams shall be continuously welded and finished smooth such that there are no visible seams. Doors shall be strong, rigid, and neat in appearance, free from warpage or buckle. Edge bends shall be true and straight and of minimum radius for the thickness of metal used.

4. Doors shall be stiffened by continuous vertically formed steel sections that, upon assembly, shall span the full thickness of the interior space between door faces. These stiffeners shall be 16 gauge minimum thickness, spaced such that the vertical interior webs shall be no more than 100 mm o.c. and securely fastened to both face sheets by spot welds spaced a maximum of 60 mm o.c. vertically. Spaces between stiffeners shall be filled with 48 kg per cubic meter fiberglass or mineral rock wool batt-type material. If the manufacturer must use heavier materials and/or closer stiffener and weld spacings to meet the performance criteria set forth in Subparagraph 1.4 F,

"Certification," of this section, he must use them in the door construction for this project. Door construction details must be submitted for approval as part of the submittal drawings.

5. Stiffeners thinner than 16 gauge (but not less than 28 gauge) may be used when the door is constructed utilizing a truss design core material which utilizes truncated triangular sections extending continuously from one door face to the other. Welds in a truss section must be spaced at a maximum of 75 mm (3 in) o.c. vertically and 70 mm (2-3/4 in) horizontally. Core material must extend to the full height and width of the door. Manufacturers utilizing truss stiffeners must meet the performance criteria set forth in this specification. Spaces between stiffeners shall be filled with 48 kg per cubic meter (3 pounds per cubic foot) fiberglass or mineral rock wool batt-type material.

6. Vertical edges shall be reinforced by a continuous steel channel, not less than 10 gauge thick, extending the full length of the door. Channel that is broken at the hinge mortises shall not be acceptable. Noncontinuous channel at lock edge shall be acceptable only to accommodate lock preparation. In these cases, hardware reinforcements shall be welded to the channel such that they become an integral part of the channel. The top and bottom edges shall be closed with a continuous channel, also not less than 10 gauge spot-welded to both face sheets a maximum of 75 mm o.c. The 10 gauge closing channels shall be reinforced with a full width of 5 mm plate and continuously welded to the vertical edge of the door at all four corners.

7. Top and bottom channel shall be fitted with an additional flush closer plate of not less than 12 gauge. The flush closing plate shall be welded in place at the corners and 60 mm long welds 300 mm o.c. Installation of closer plate using screws, security or otherwise, shall be deemed unacceptable. The end channel and flush closer plate shall be installed such that they are permanent and nonremovable.

8. Edge profiles shall be provided on both vertical edges of door as follows:

   a. Single-Acting Doors: Beveled 3 mm in 50 mm.
   b. Horizontal tract doors on equivalent square profiles.

D HARDWARE REINFORCEMENTS

1. Doors shall be mortised, reinforced, drilled, and tapped at the factory for completely templated, mortised hardware in accordance with the final approved hardware schedule and templates provided by the hardware

supplier. Where surface-mounted hardware is to be applied, door shall be reinforced, drilled, and tapped in accordance with final approved hardware schedules and templates.

2. Minimum thicknesses for hardware reinforcements shall be as follows:

   a. Full mortised hinges and pivots: 4.5 mm.
   b. Surface-applied maximum security: 6 mm plate.
   c. Reinforcements for lock fronts, concealed holders, or surface: 4.5 mm.
   d. Mounted closures: 4.5 mm.
   e. Internal reinforcements for all other surface-applied hardware: 4.5 mm.

3. Hinge and pivot reinforcement shall consist of an 200 mm long, pressed formed, 4.5 mm angle that is projection-welded in six places to the face of the doors, and additionally plug-welded at each end to the opposite door face sheet, forming a rigid structural angle reinforcement at each hinge. Flat or offset strap reinforcements that are welded to the inside edge of the door or to perimeter channel shall be unacceptable. Reinforcements for mortised hardware occurring in the edge of the door shall be securely welded to the inside of both face sheets of the door.

4. Doors containing manual prison locks (80 series) will be flush-mounted with the face sheets of the door (refer to detail).

5. Doors that require additional hardware (e.g., food pass openings, locks, and hinges) will be as shown on detail.

6. All detention grade hollow metal doors 900 mm or greater in width shall be hung using 4 hinges.

E. GLASS MOLDINGS AND STOPS

1. Doors shall be provided with steel moldings to secure glazing in accordance with glass sizes and thicknesses shown with a minimum 25 mm glass engagement.

2. Fixed glass molding shall be not less than 2.5 mm, and shall be spot-welded on the secure side a minimum of 75 mm o.c.

3. Removable glass stops shall be pressed steel angle not less than 3.5 mm with tight-fitting mitered corner joints, and secured with #1/4-20 Torx pinhead

screws spaced 150 mm o.c. maximum with a maximum spacing of 50 mm from the ends of the stops.

4. Where glass thickness dictates, 10 gauge, offset surface-mounted glass stops shall be used. The corners shall be tight-fitting and mitered, and the glass stop shall be secured to the face of the door using #1/4-20 Torx pinhead screws spaced 150 mm o.c. maximum with a maximum spacing of 50 mm from the ends of the stops.

5. Removable glass stops specified in paragraphs 2.3 I.3 and 2.3 I.4 shall meet performance criteria designated in the performance section of this specification.

6. Removable stops shall be on the side opposite the area of inmate confinement or where they are likely to be unsupervised.

F. SECURITY LOUVER DESIGN: Door face sheets shall be furnished with 25 mm wide horizontal slats of length equal to the designated louver width, and spaced 25 mm apart. The number of slats shall be determined by the designed louver height. The louvers shall be of a 12 gauge Z-type construction and weld 100 mm o.c. to the inside face sheets along the 25 mm strips between the slats. Vertical channels of 12 gauge shall be welded in place on each end of the louver slats and shall extend above and below the slats 100 mm. The Z louvers shall be continuously welded at each end to the channels. Upon completion, the louvers shall become an integral part of the internal door construction. Full width by full height face sheet louver cutouts shall be unacceptable. Louvers shall meet impact load tests as designated in the performance section of this specification.

G. FOOD PASS OPENINGS: The food pass opening shall be flush opening fabricated using 12 gauge interior channels, securely welded to the inside of both face sheets. The four corner seams shall be continuously arc-welded and dressed smooth. The finished opening shall be constructed such that it cannot be dismantled or otherwise affected by tampering or scraping.

1. Food pass shutter shall be constructed as per detail. The food pass shutter shall be furnished with continuous stainless steel piano hinges, similar to a #12 deadbolt type locking device as specified in 11197 - DETENTION HARDWARE.

2. Shutters shall be chemically treated for maximum paint adhesion and given a shop coat of rust-inhibitive primer.

H. SPEAKING DEVICES: The speaking device shall consist of a rectangular pattern

of round holes, no more than 6 mm diameter, in both face sheets directly across from each other. The minimum size of the rectangular hole pattern shall be 25 mm high x 100 mm wide with a minimum of two rows of holes spaced no more than 25 mm o.c. The interior of the door between the hole patterns shall be baffled using pressed steel sections, minimum 2 mm thick such that no objects can be passed through.

I. FINISH: After fabrication, tool marks and surface blemishes shall be filled and sanded as required to make both faces and both vertical edges smooth and free from irregularities. After appropriate preparation, exposed surfaces shall receive two shop coats of a rust-inhibitive primer that meets or exceeds ASTM B117 salt spray for 150 hours and ASTM D1735 water fog test for organic coatings for 200 hours, and that is fully cured prior to shipment.

J. Door manufacturer shall provide drilled and tapped holes for all surface-applied hardware according to approved templates.

K. SECURITY HOLLOW METAL FRAMES

1. Frames shall be constructed of commercial-quality cold-rolled steel that complies with ASTM A366. The steel shall be free of scale, pitting, coil breaks, or other surface defects. Metal thicknesses shall be 12 gauge.

2. Frames shall be custom-made welded units of the sizes and types shown on approved shop drawings. Finished work shall be strong and rigid, neat in appearance, square, and free of defects, warps, or buckles. Pressed steel members shall be straight and of uniform profile throughout their lengths.

3. Corner joints shall have contact edges closed tight with faces mitered and stops either butted or mitered. Corner joints shall be continuously welded, and the use of gussets or splice plates will be unacceptable.

4. Stops: Minimum depth of stops in door opening shall be 15 mm except at electric locks; the minimum depth of the stop on the lock side of the jamb shall be 25 mm in lieu of the 15 mm. For glass and panel openings, stops shall be 25 mm minimum glass or panel engagement, or as approved by the security glazing manufacturer, to include rabbeted depth of stops.

5. Loose Glazing Stops:

   a. Pressed steel angle glazing stops shall be no less than 3.5 mm. Angle stops shall be mitered and tight-fitting at the corner joints.
   b. There shall be a 5 mm x 62 mm continuous backup plate spot-welded

under the frame where loose glazing stops are to be attached.

c. The frame under the glazing stops and the inside of the glazing stop shall be chemically treated for maximum paint adhesion and painted with a rust-inhibitive primer prior to installation in the frame.

d. Stops shall be secured with Torx-head tamperproof machine fasteners where security glazing is scheduled. Screws shall be 6 mm -20 x proper length. Locate fasteners not more than 50 mm from each end of glazing stop nor more than 150 mm o.c.

e. Removable stops shall be on the side opposite the area of inmate confinement or where they are likely to be unsupervised.

6. Frames for multiple openings shall have mullion members that, after fabrication, are closed tubular shaped conforming to profiles shown and having no visible seams or joints. Joints between faces of abutted members shall be continuously welded and finished smooth. Joints between stops of abutted members shall be welded along the depth of the stop and left neat and uniform in appearance.

7. Hardware Reinforcements and Preparation: Frames shall be mortised, reinforced, drilled, and tapped for all templated mortised hardware in accordance with the final approved Security Hardware Schedule and templates provided by the hardware supplier. Where surface-mounted hardware is to be applied, frames shall be reinforced, drilled, and tapped in accordance with final approved hardware schedules and templates. Minimum thicknesses of hardware reinforcing plates shall be as follows:

a. Hinge and pivot reinforcements — 6 mm x 250 mm steel plate.
b. Strike reinforcements — 4.5 mm.
c. Closer reinforcements — 4.5 mm.
d. Flush bolt reinforcements — 4.5 mm.
e. Reinforcements for surface-applied hardware — 4.5 mm.
f. Frame reinforcements for glazing stops — 25 mm x 3.5 mm continuous around entire opening.

(1) Hinge and pivot reinforcements shall consist of 6 mm x 37 mm long straps projection welded in a triangle pattern in three places at each end. The strap shall be additionally reinforced by a 2.5 mm thick by 50 mm side angle welded in two places on the strap reinforcement and two places to the inside face of the frame.

(2) Where electrically operated hardware is required, hardware enclosures shall be provided. Lock pocket shall be 2.5 mm thick steel welded all sides. An additional 5 mm steel backup

plate shall be spot-welded in the lock pocket to attach the lock to. Provide 5 mm steel lock pocket cover plate deburred. Surface-mount with ¼-20 twist-off head security screws, with a minimum of eight (8) screws. These screws shall be equally spaced around the cover plate. Frame manufacturer shall install electrical conduit within the hollow metal door frame as required for specific electromechanical locks and door position switches. Minimum size of conduit shall be 20 mm or as specified. Termination of conduit shall be within lock pocket or recessed motor boxes.

8. Floor anchors with two holes for fasteners shall be fastened inside jambs with at least four spot welds per anchor. Where so scheduled, adjustable floor anchors providing not less than 50 mm height adjustment shall be fastened in place with at least four spot welds per anchor. Thickness of floor anchors shall be 4.5 mm steel.

9. Frames shall have adjustable 6 mm pencil rod anchors for setting into masonry partitions or other appropriate anchors for conditions as shown. Provide other types of anchors when required for labeled conditions.

10. Plaster guards made from no less than 0.4 mm thick steel shall be welded in place at hardware mortises on frames to be set in masonry or concrete openings.

11. Frames shall be provided with two temporary steel spreaders welded to the feet of jambs to serve as bracing during shipping, handling, and installation.

12. When shipping limitations so dictate, fabricate frames for large openings in sections designated for splicing in the field by others. Where splicing is necessary, install angle splices at the corners of the profile and extend at least 100 mm on either side of the joint. Splicing angles shall be the same gauge thickness as the frame.

13. Prepare frame for silencers. Provide three single silencers for single doors on strike side and two single silencers on frame head at double doors without mullions.

14. Finish: After fabrication, all tool marks and surface imperfections shall be removed, and exposed faces of all welded joints shall be dressed smooth. Frames shall be chemically treated to ensure maximum paint adhesion and shall be coated on all accessible surfaces with a rust-inhibitive primer that meets or exceeds ASTM B117-90 salt spray for 150 hours and ASTM D1735-

62 water fog test for organic coatings for 200 hours. Paint shall be fully cured prior to shipment. Exterior frames shall be galvanized and primed.

L. ROUND BARS AT SECURITY METAL FRAMES

Construct round bars of 25 mm diameter, tool-resisting steel meeting the requirements of ASTM A627, spaced on 150 mm centers. Project bars into frames 25 mm and weld bars to frame from back side of frames.

M. STEEL GRATING

General: At points where steel grating partitions, cell fronts, and doors are indicated on the drawings, they shall be constructed of the quality, sizes, and shapes of the members specified herein. Vertical ribbed bars shall pass through and positively interlock at each intersection with horizontal flat bars without reducing the diameter of the vertical bars. Pipe sleeves, swedging, caulking, or other interlocks that are not positive, or dependent on friction for security, are unacceptable for this work. Provide vertical flat bar framing members of the same size and material quality specified for horizontal bars. Connections of grating partitions to adjacent walls, floors, and ceilings shall be in compliance with details shown on the drawings.

N. SEMI-TOOL-RESISTING GRATING PARTITIONS

1. Grating partitions and cell fronts are to be constructed in sections, or panels, of proper width, comprised of 22 mm diameter homogeneous, tool-resisting, double-ribbed vertical bars, complying with ASTM A627, spaced not to exceed 100 mm o.c. Intermediate horizontal flat bars and framing members shall be 56 mm x 10 mm mild steel, with horizontals spaced not to exceed 300 mm o.c.

2. Top horizontal flat bar shall be connected to vertical framing members with a 50 mm x 50 mm x 6 mm angle knee securely shop plug-welded in place.

3. Intermediate horizontal flat bar intersections with vertical framing members shall be secured permanently in place by 5 mm shop fillet welds.

4. Vertical double-ribbed bars shall be securely welded in place at both the top and bottom flat bar framing members.

O. GRATING DOORS

1. When grating doors are required in grating partitions, they shall be constructed of the same materials as the partitions of which they are a part.

2. Grating doors shall be shop-prepared to receive hardware as specified. Sliding grating doors shall have provisions for hanger, guide, and strike shop-applied.

3. Food openings shall be provided in grating doors where indicated on the door schedule. Opening in grating shall be approximately 375 mm wide x 115 mm high, framed at the top with a flat bar same as intermediate horizontal bars. Provide a 6 mm thick steel plate shelf, approximately 125 mm wide x 350 mm long, at the bottom of the food openings.

P LABORATORY TESTS: Provide reports of tests conducted on 22 mm diameter tool-resisting, double-ribbed bars used in this construction, certifying compliance with ASTM A627.

EXECUTION

A. INSTALLATION

1. Installation shall be in accordance with shop drawings and shall be accomplished by skilled workmen. Welding shall be done as indicated in accordance with American Welding Society Publication D1.1.

2. Install frames plumb, square, straight, true, rigidly secured in place, and properly braced. Anchor frames securely to floor and at jambs. Weld field joints, grind smooth, and fill with body putty to completely conceal seams, including those at transom paneling, and to form a smooth, unbroken, finished surface. Frames shall be grout-filled with a minimum of 25 MPa pea gravel concrete. Install miscellaneous items as shown.

3. For hardware requirements in secure areas coordinate with the 01000 - SECURE CONSTRUCTION REQUIREMENTS and 11197 - DETENTION HARDWARE.

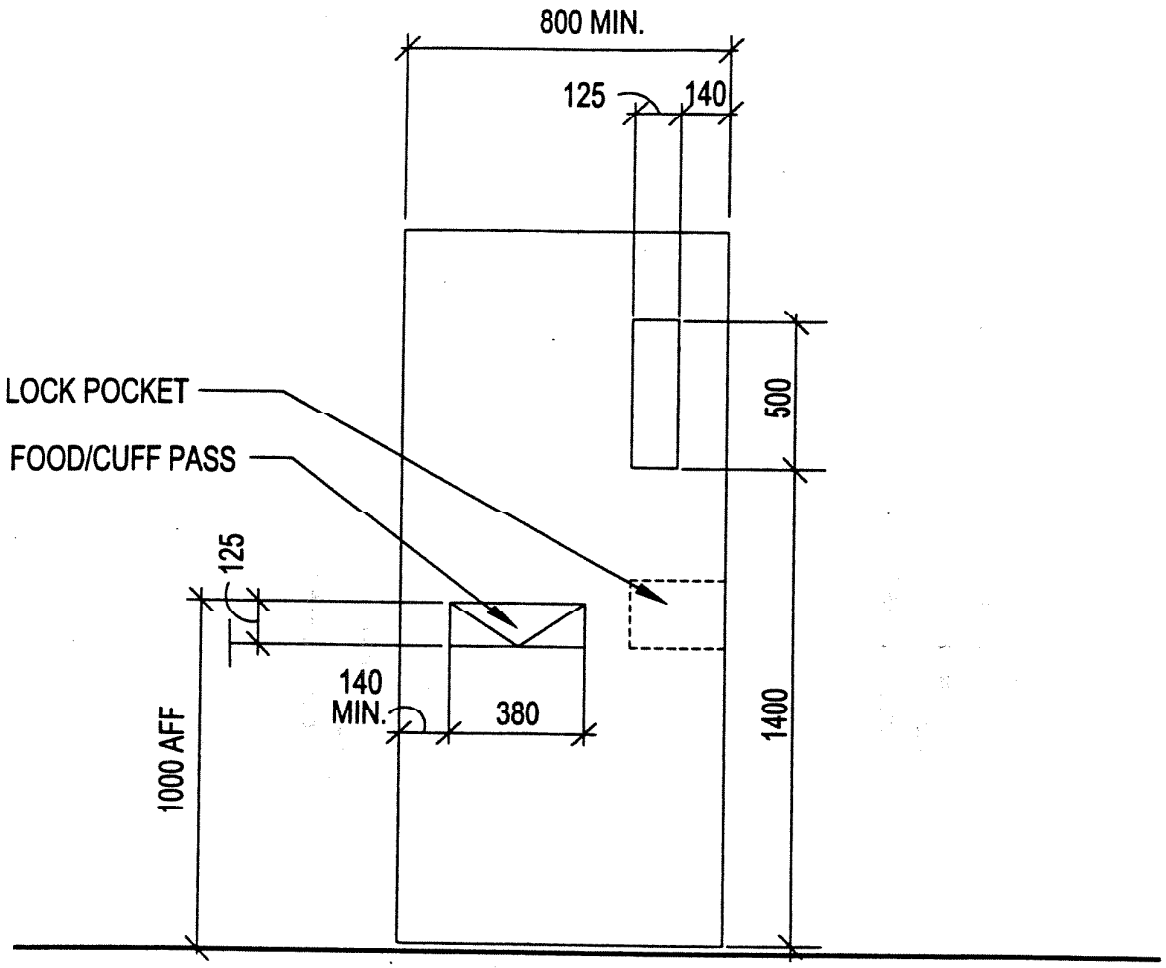
4. The following standard drawings and/or details are provided as examples of how the requirements for this section can be met. These or other drawings approved by FBOP shall be included in the contract documents for the project.

SCHEDULE OF DRAWINGS

11191 - D1 HIGH SECURITY GENERAL HOUSING ROOM DOOR
11191 - D2 HIGH SECURITY SPECIAL HOUSING ROOM DOOR
11191 - D3 LOW AND MEDIUM SECURITY SPECIAL HOUSING ROOM DOOR

11191 - D4 ARMORY INTERIOR GRILLE WITH PASS
11191 - D5 TYPICAL HOLLOW METAL FRAME ELEVATION
11191 - D6 TYPICAL FRAME ANCHORING DETAIL
11191 - D7 JAMB ANCHOR DETAIL
11191 - D8 CONTROL ROOM FRAME ELEVATION
11191 - D9 CONTROL ROOM WINDOW FRAME DETAIL
11191 - D10 TYPICAL INMATE ROOM WINDOW FRAME ELEVATION
11191 - D11 WINDOW FRAME DETAIL
11191 - D11A SECURITY WINDOW ELEVATIONS
11191 - D11B SECURITY WINDOW JAMB DETAIL
11192 - D11C SECURITY WINDOW JAMB DETAILS
11191 - D12 ANCHORING DETAIL
11191 - D13 TYPICAL SECURITY HOLLOW METAL FRAME
11191 - D14 TYPICAL HOLLOW METAL FRAME
11191 - D15 FRAME DETAIL WITH ELECTRIC LOCK MOUNT
11191 - D16 JAMB DETAIL WITH ELECTRIC LOCK MOUNT
11191 - D17 COVER PLATE ON HINGE SIDE FLUSH WITH DOOR SKIN
11191 - D18 COVER PLATE ON STOP SIDE FLUSH WITH DOOR SKIN
11191 - D19 FOOD PASS DETAIL
11191 - D20 PAPER PASS SILL DETAIL (CASHIER & PHARMACY ONLY)
11191 - D21 PAPER PASS HEAD DETAIL
11191 - D22 PAPER PASS JAMB DETAIL
11191 - D23 PAPER PASS ELEVATION
11191 - D24 JAMB DETAILS - PRE-CAST / CAST IN PLACE
11191 - D25 ARMORY WEAPONS ISSUE DOOR - INTERIOR ELEVATION
11191 - D26 ARMORY WEAPONS ISSUE DOOR
11191 - D27 SHU OUTSIDE RECREATION GATE
11191 - D28 CHASE ACCESS DOOR FRAME
11191 - D29 PHARMACY PASS THRU WINDOW ELEVATION
11191 - D30 DUTCH DOOR DETAILS B TOOL ROOM

END OF SECTION



MEDIUM AND HIGH SECURITY GENERAL HOUSING ROOM DOOR

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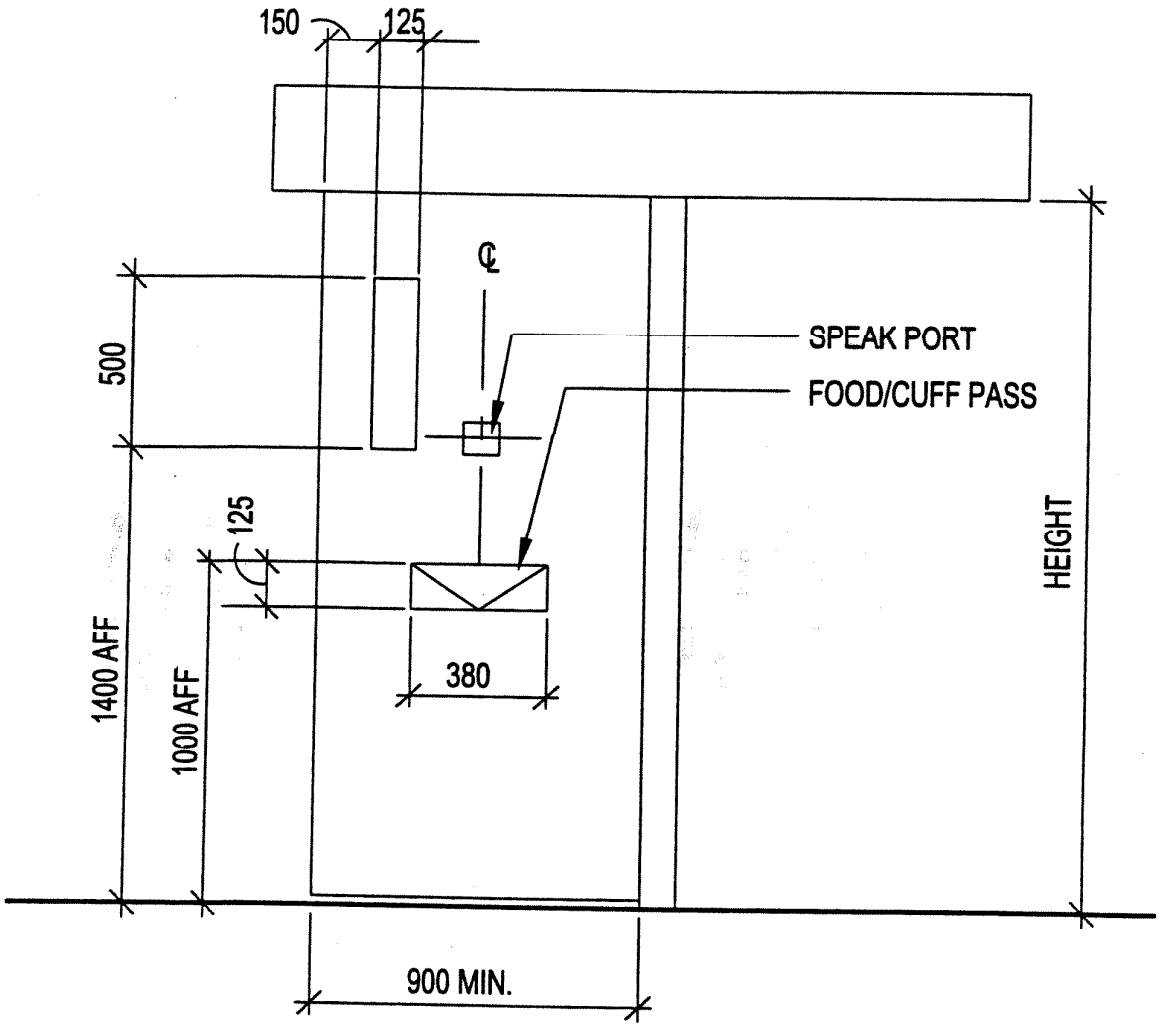

HIGH SECURITY
SPECIAL HOUSING ROOM DOOR

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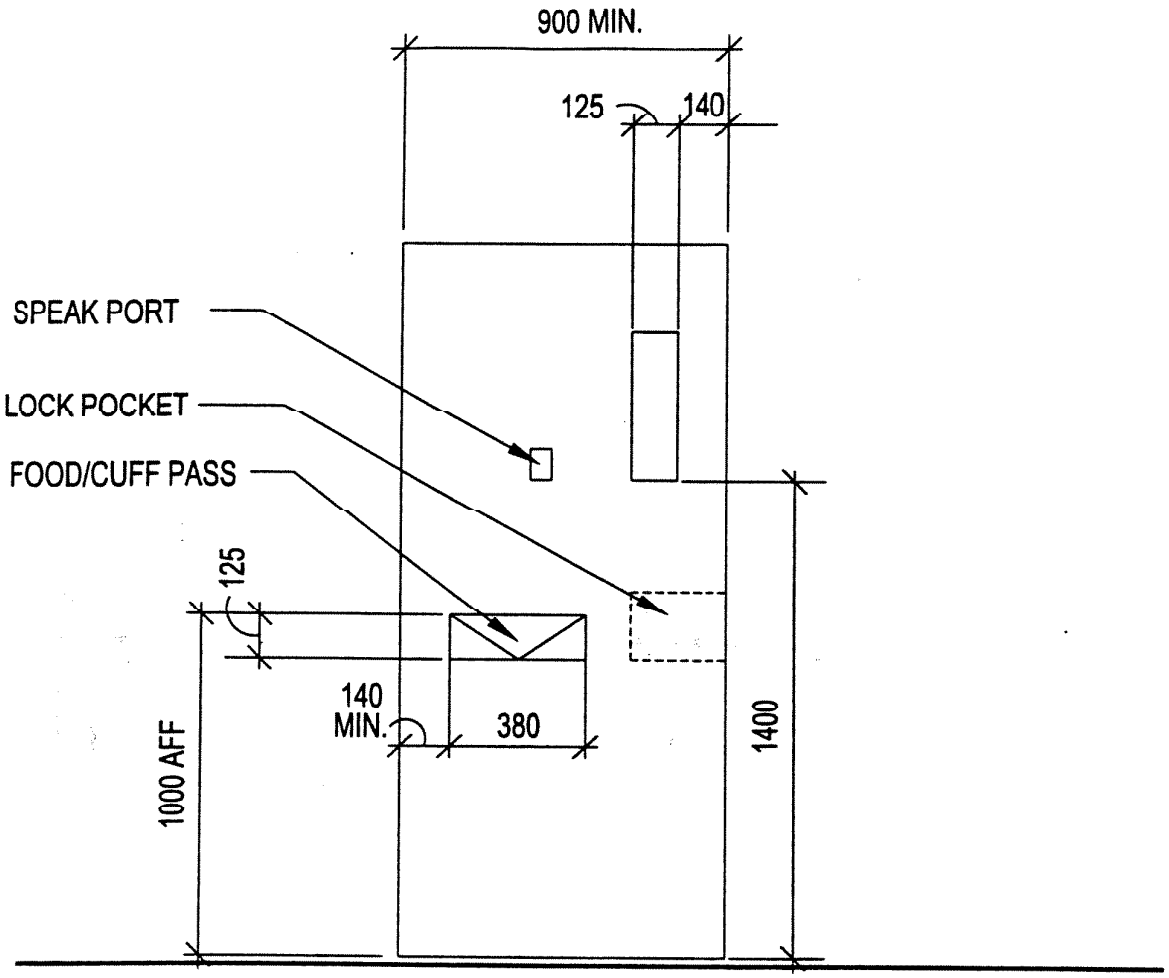

LOW & MEDIUM SECURITY SPECIAL HOUSING ROOM DOOR

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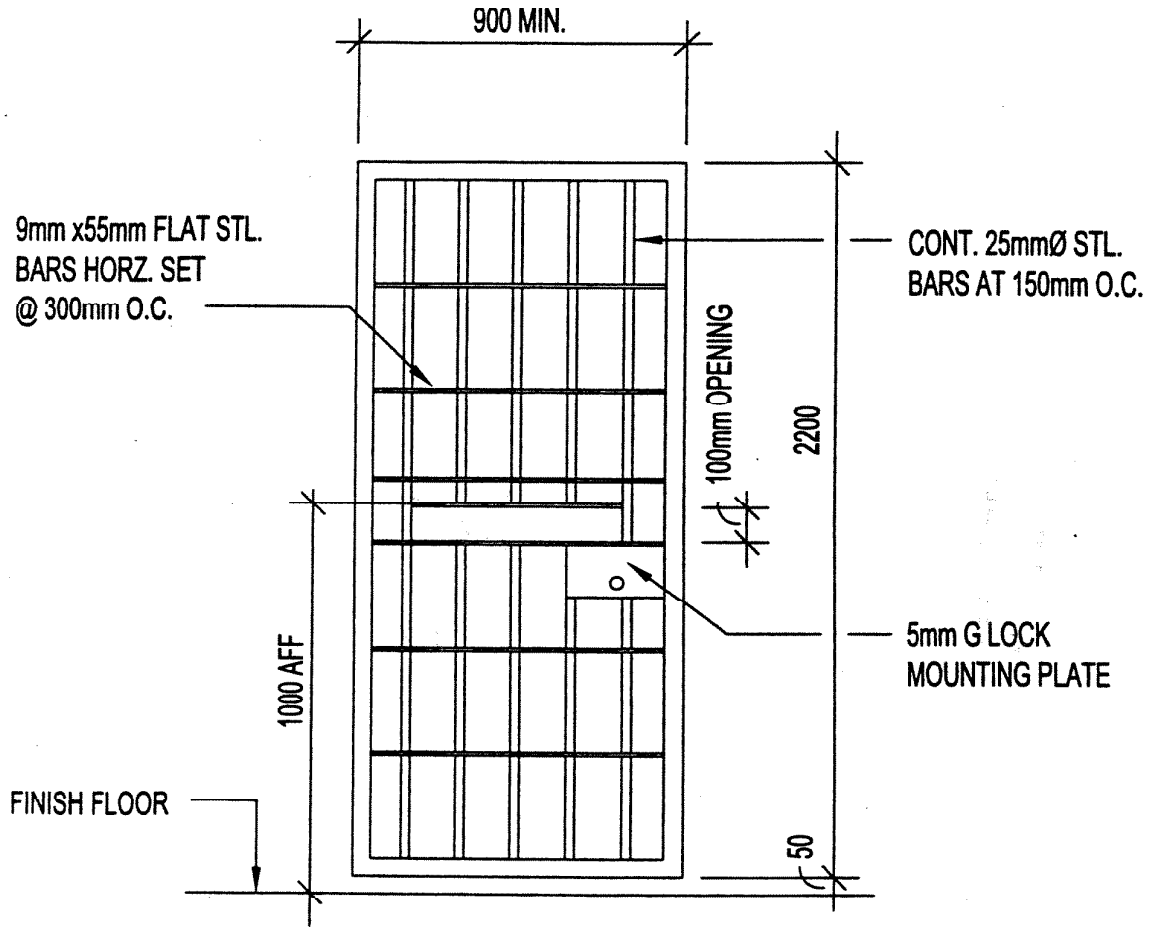

ARMORY INTERIOR GRILLE W/ PASS

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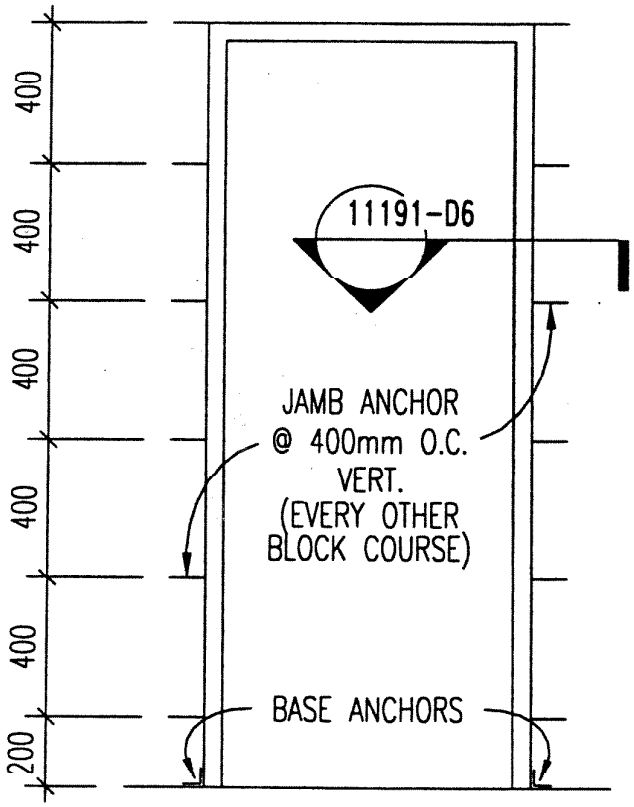
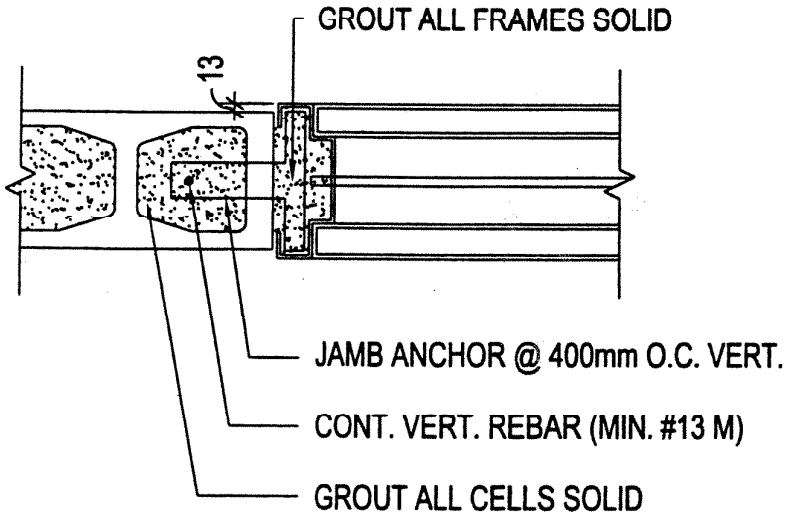


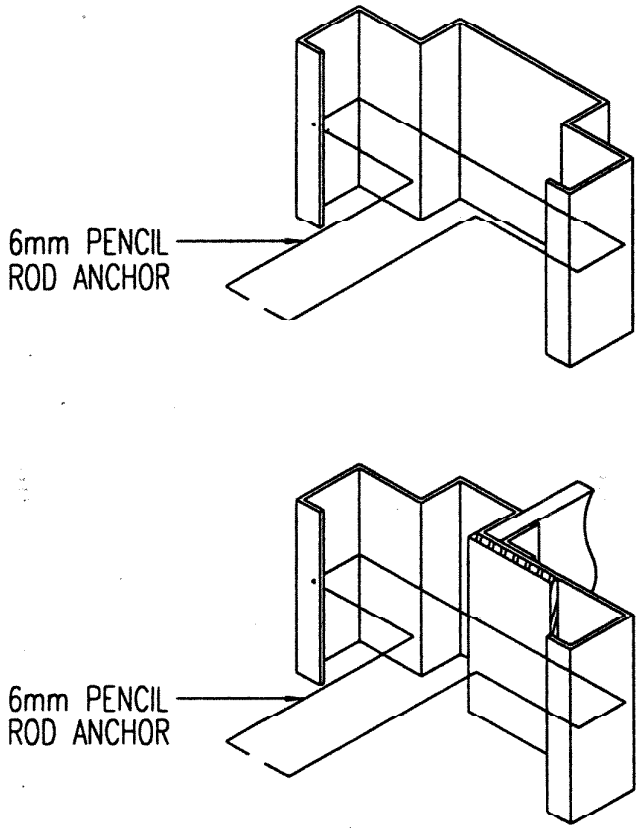
TYPICAL HOLLOW METAL FRAME ELEVATION

N.T.S.



TYPICAL FRAME ANCHORING DETAIL

N.T.S.



JAMB ANCHOR DETAIL

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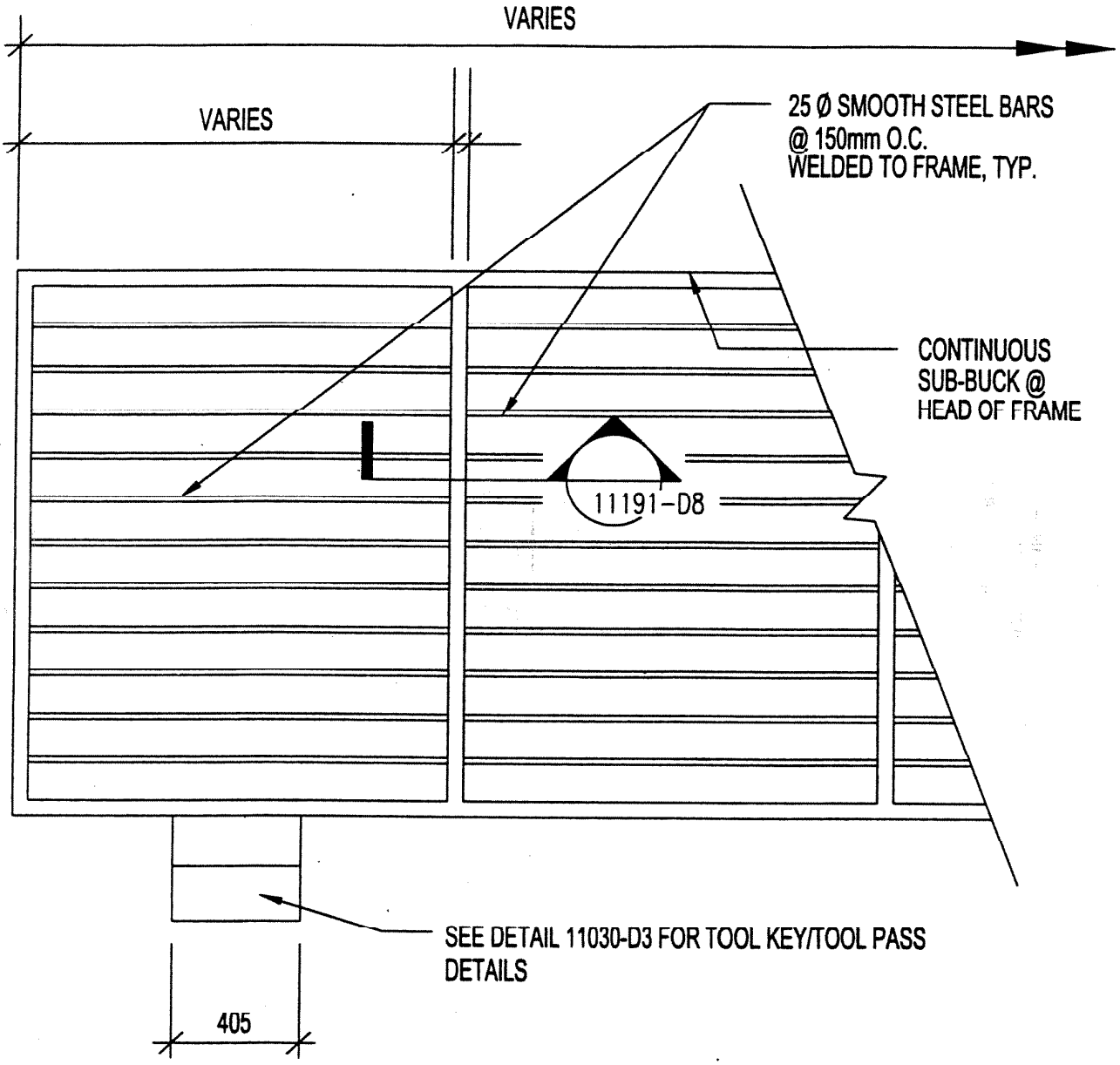
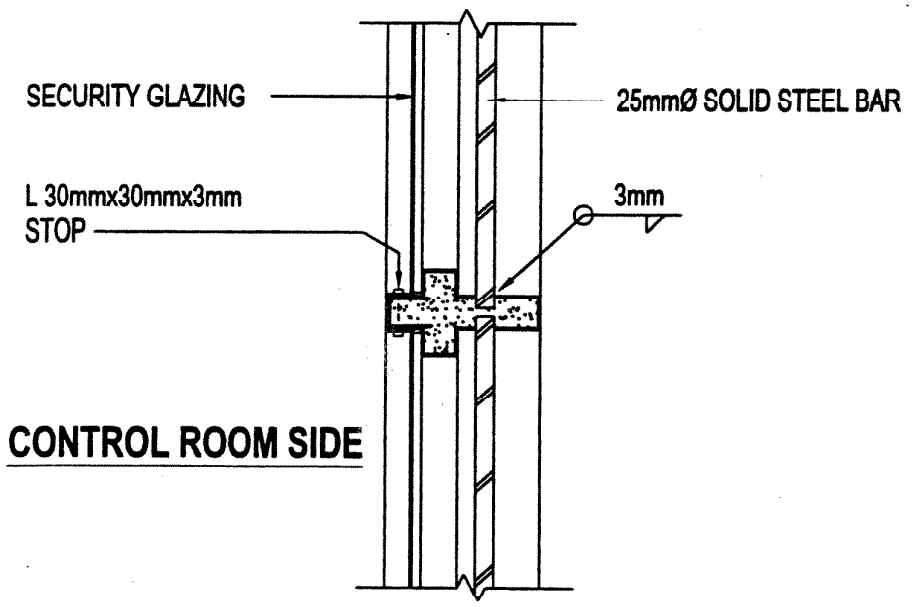


CONTROL ROOM FRAME ELEVATION

N.T.S.



CONTROL ROOM WINDOW FRAME DETAIL

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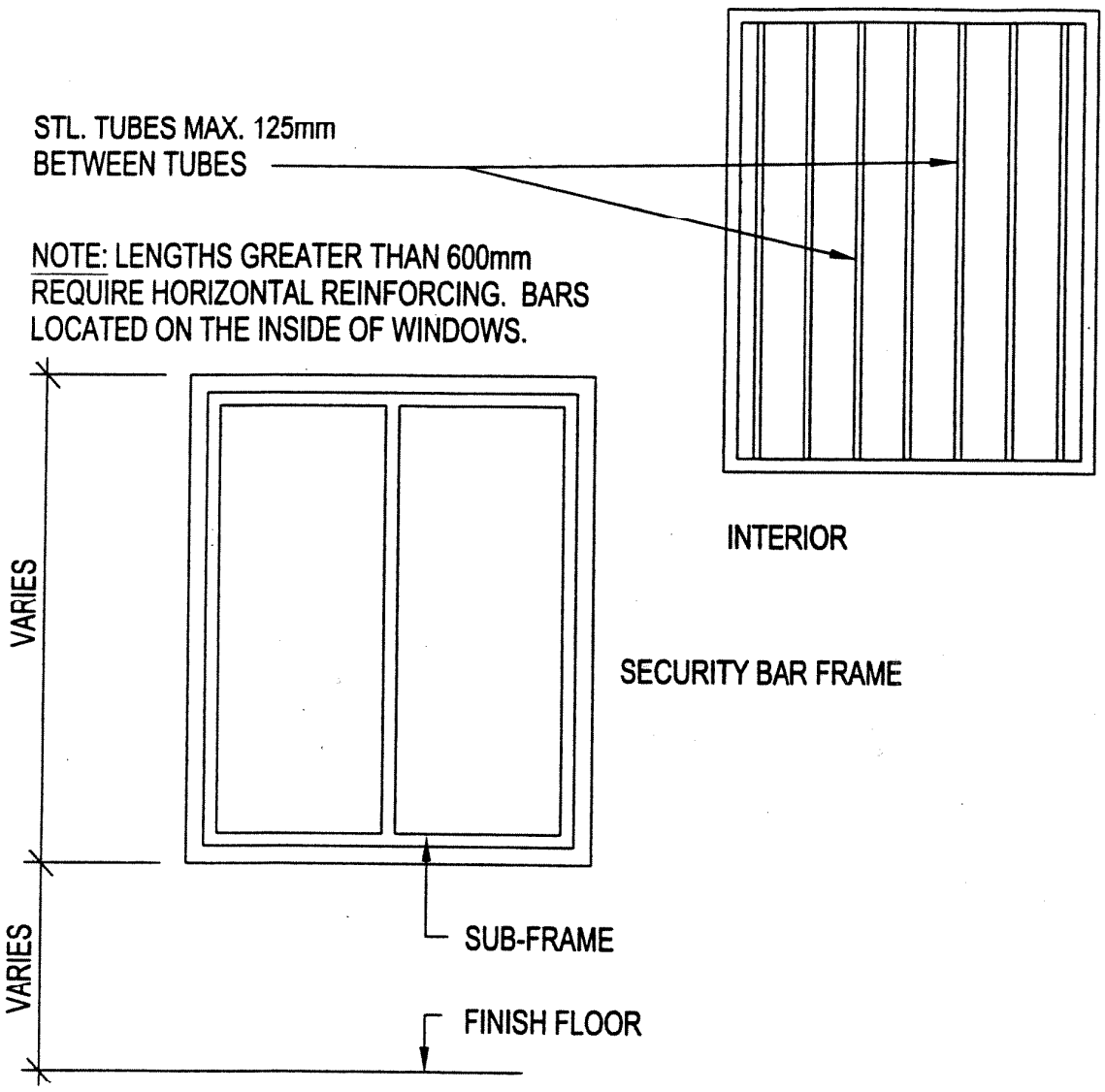

TYPICAL INMATE ROOM WINDOW FRAME ELEVATION

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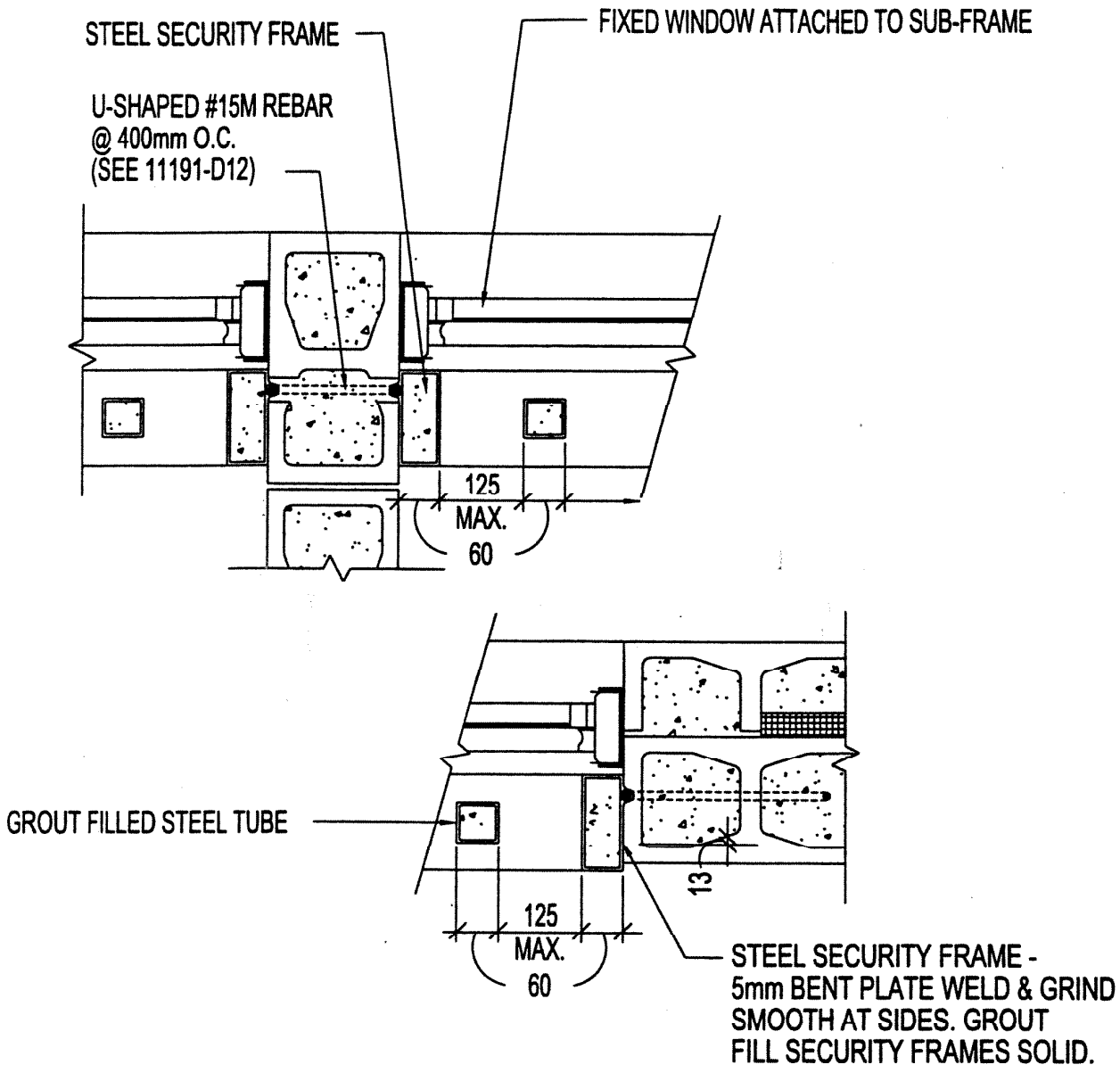

WINDOW FRAME DETAIL

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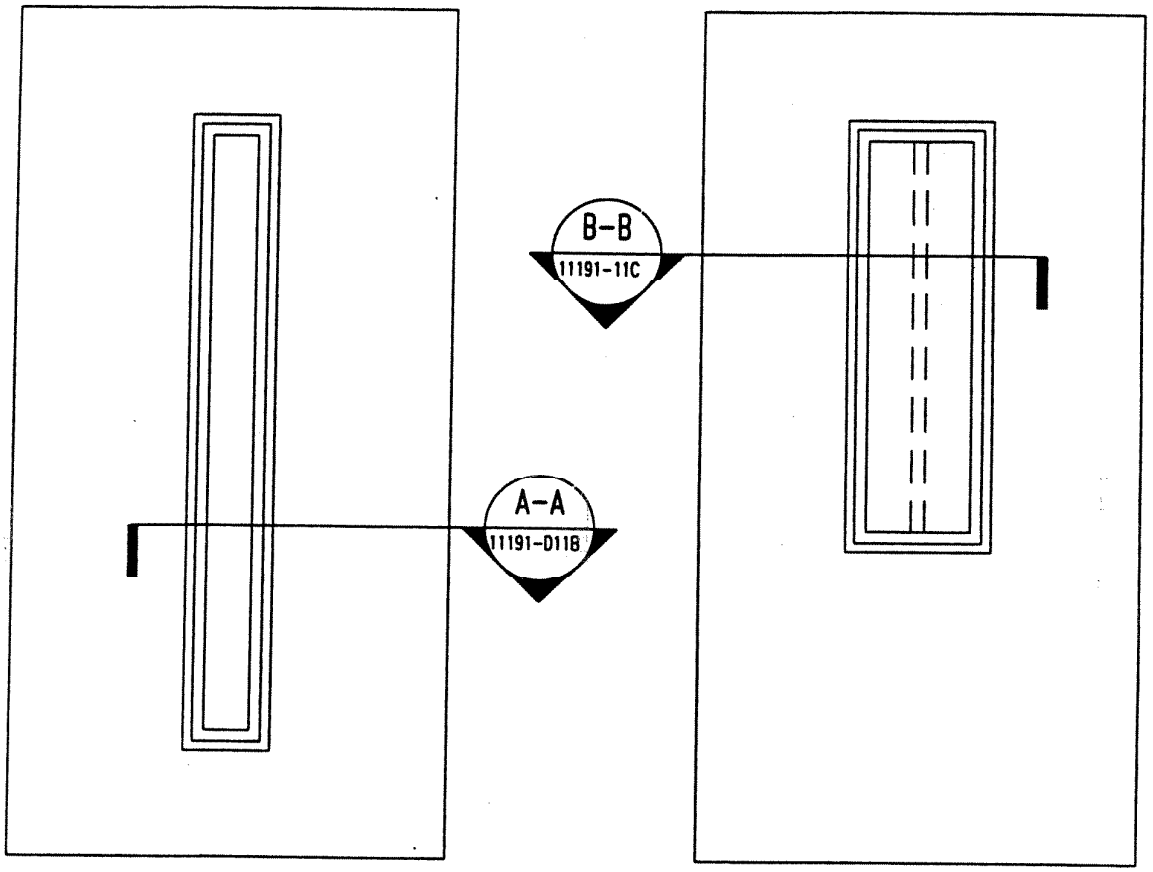

ELEVATION 'A' ELEVATION 'B'

WINDOW ELEVATIONS

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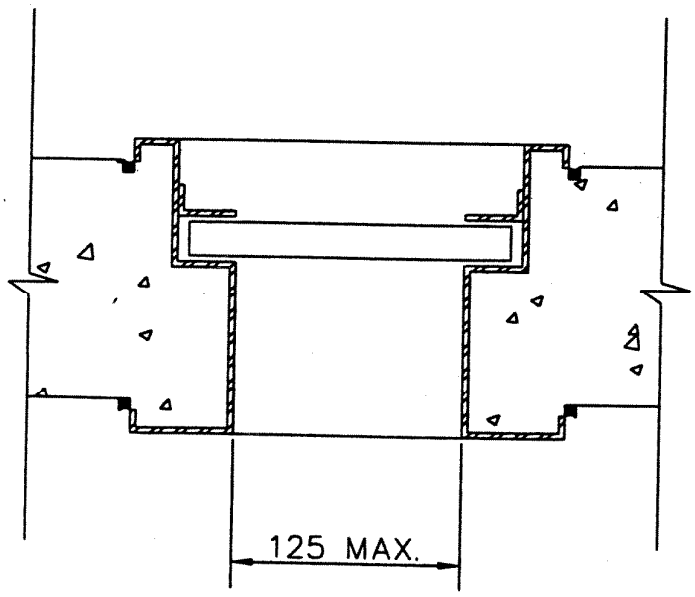
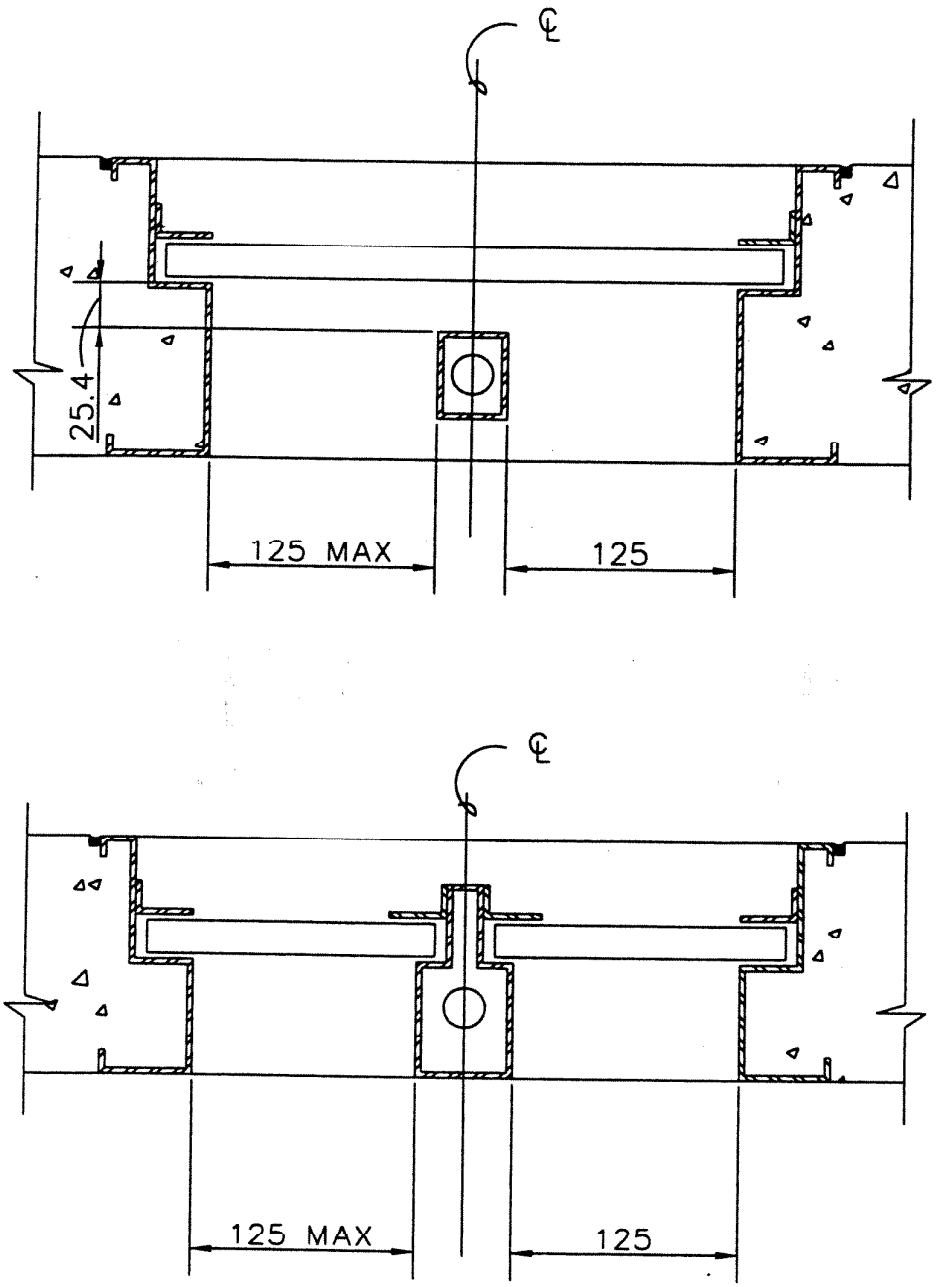


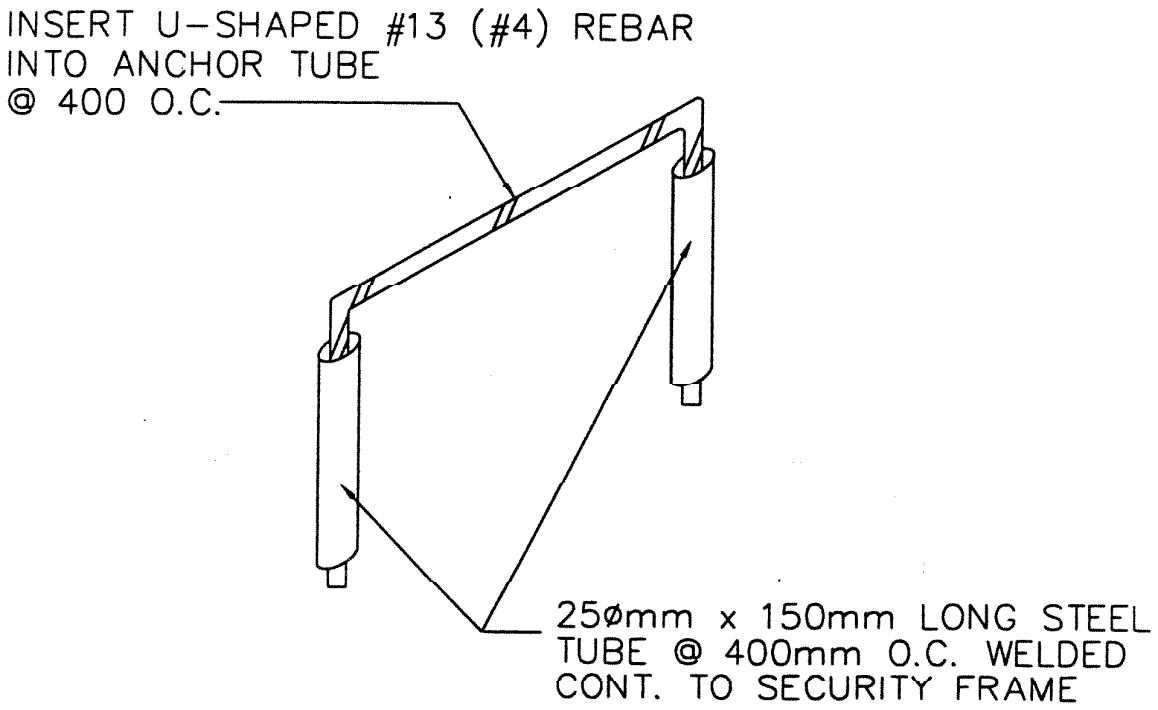
A-A SECTION

1:100



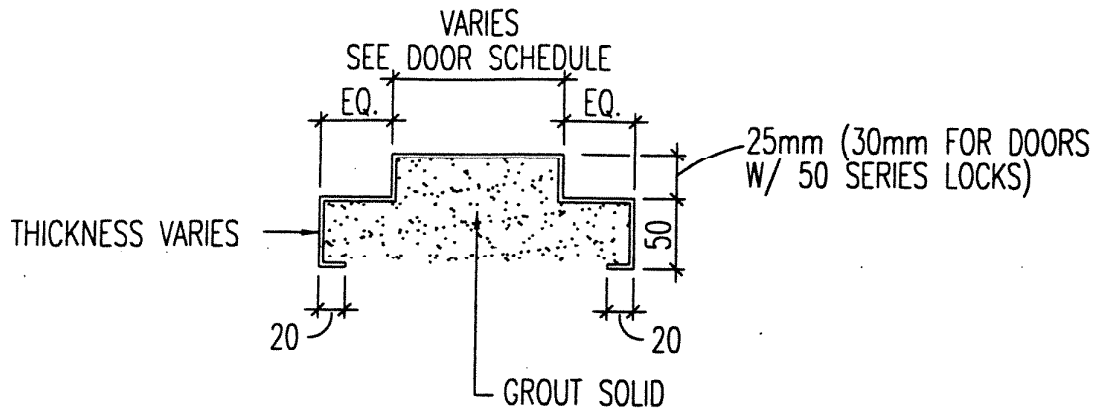
B-B SECTION

1:100

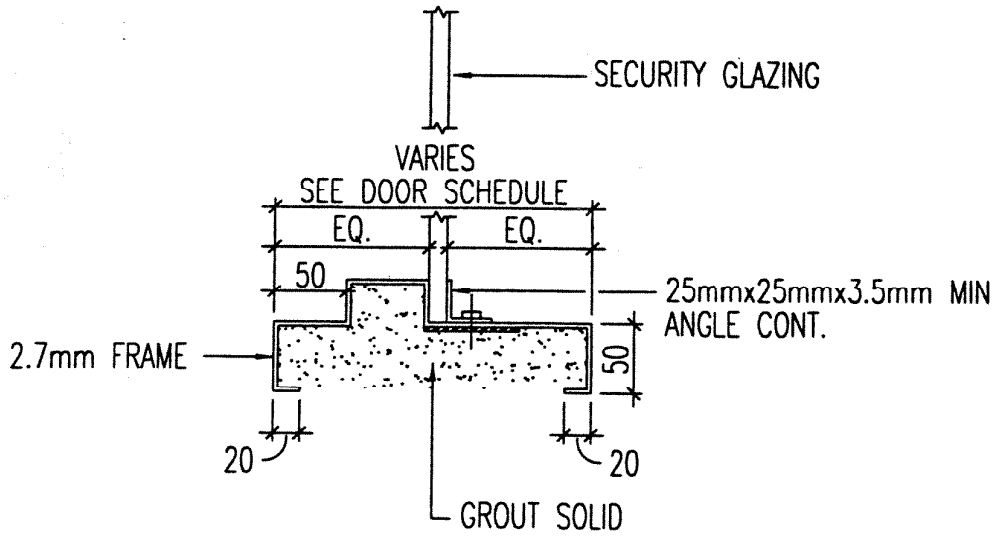


ANCHORING DETAIL

N.T.S.



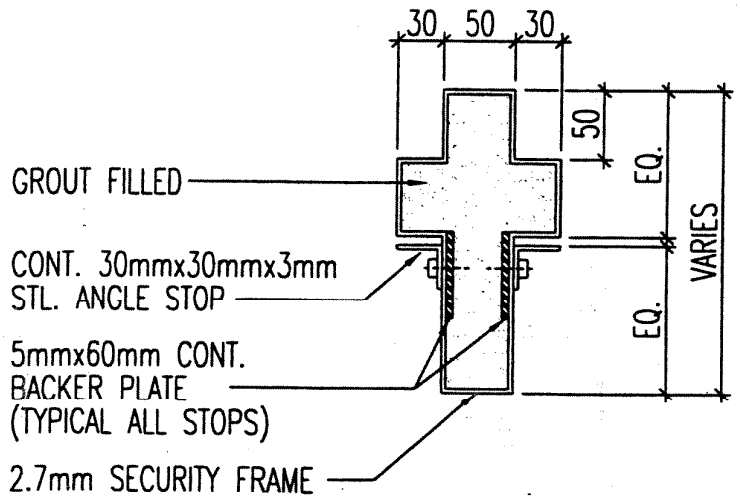
JAMB



HEAD/SILL/JAMB

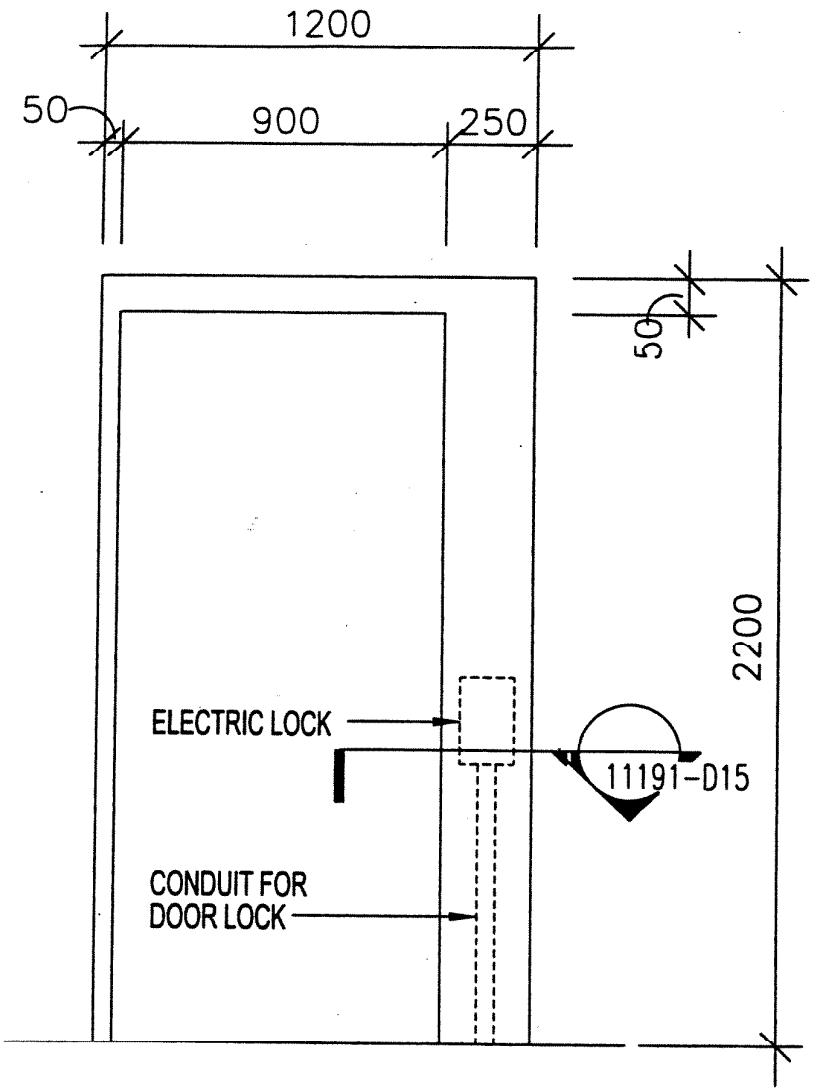
TYPICAL SECURITY HOLLOW METAL FRAMES

N.T.S.



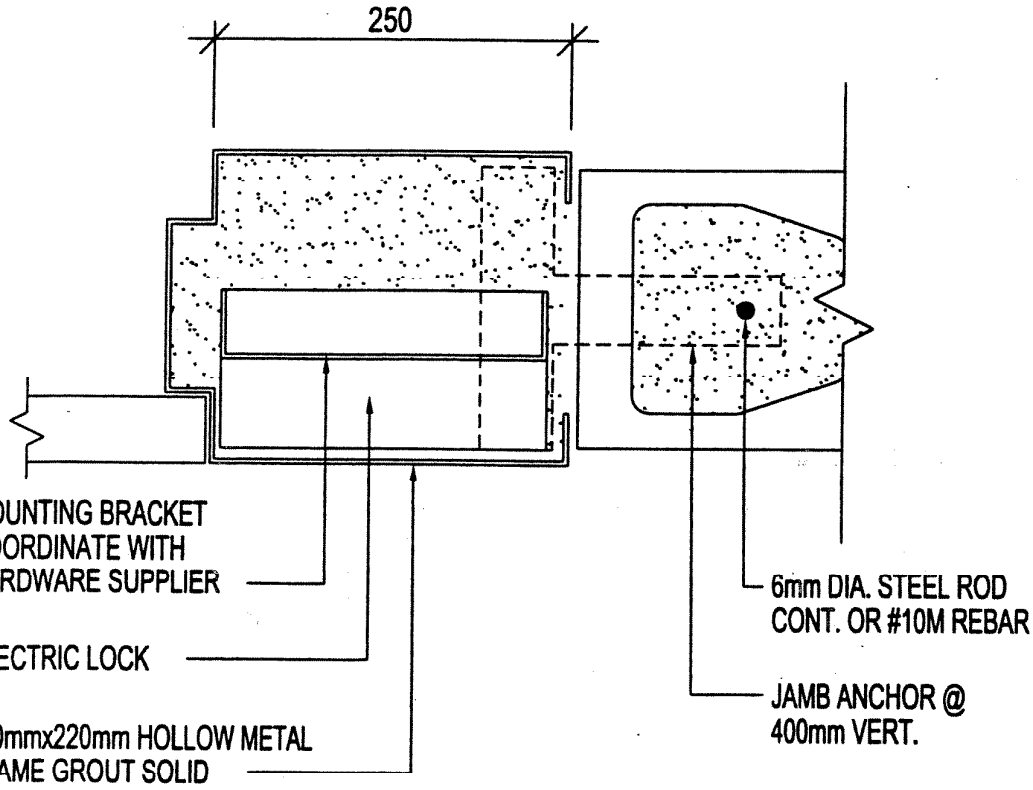
TYPICAL HOLLOW METAL FRAME

N.T.S.



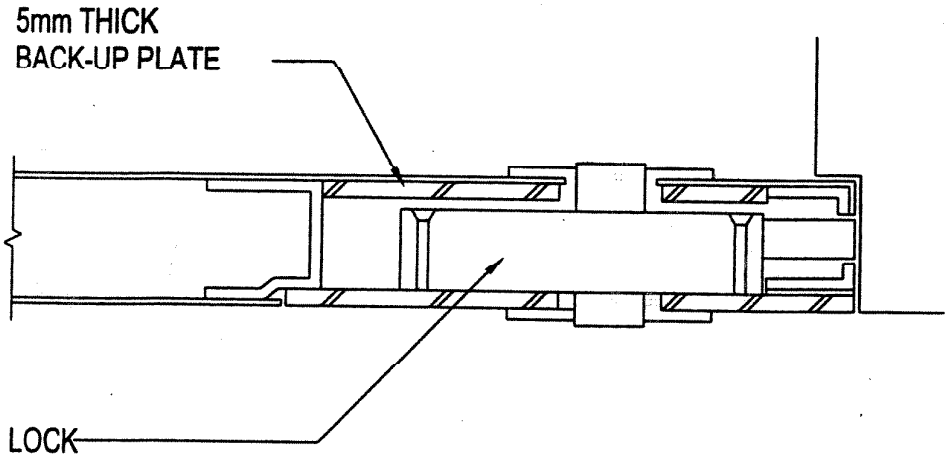
FRAME DETAIL WITH ELECTRIC LOCK MOUNT

N.T.S.



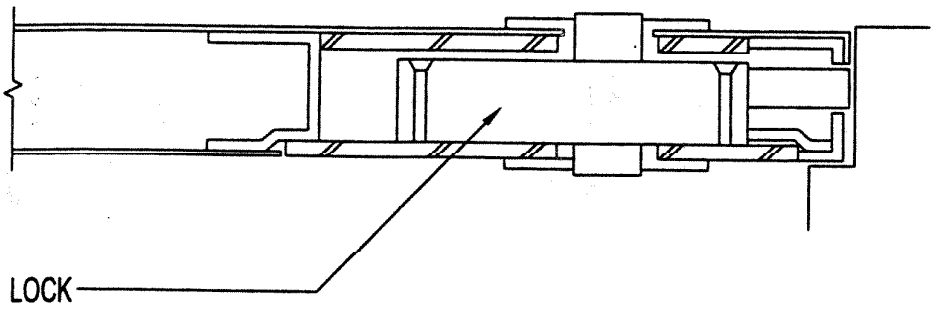
JAMB DETAIL WITH ELECTRIC LOCK MOUNT

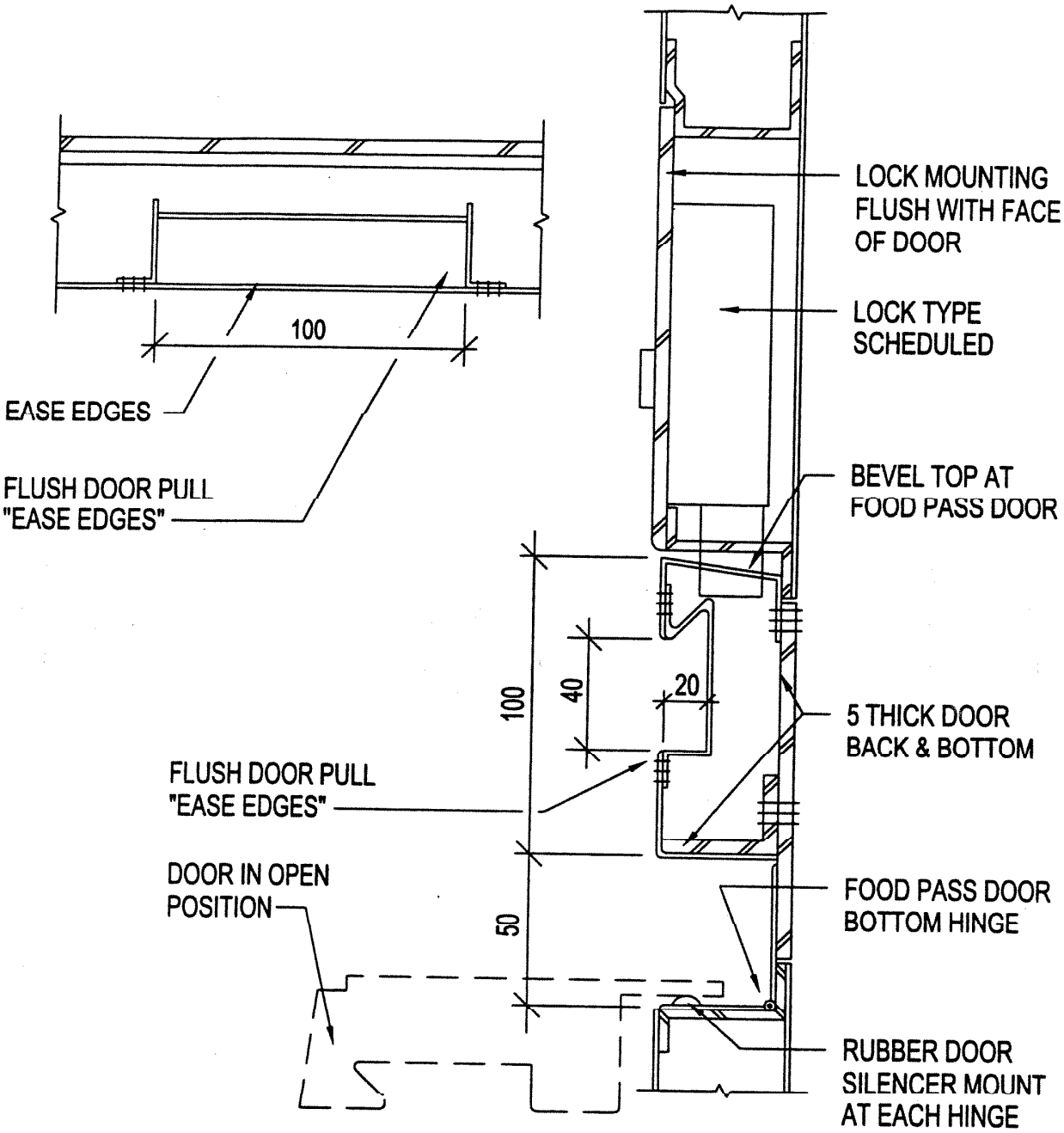
N.T.S.



COVER PLATE ON HINGE SIDE FLUSH W/ DOOR SKIN

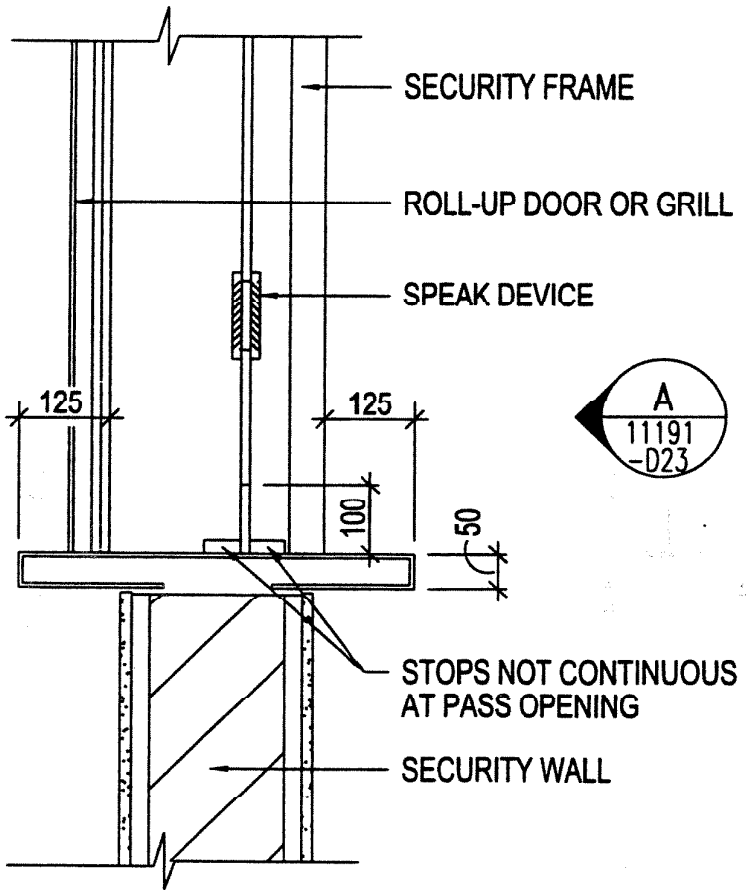
N.T.S.


LOCK



FOOD PASS DETAIL

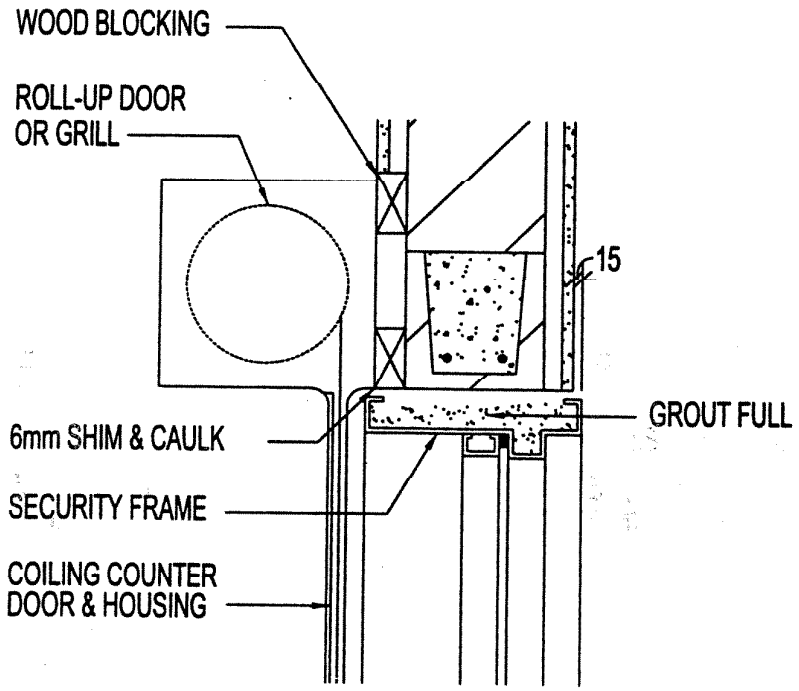
N.T.S.



(SEE ALSO 08331-D1,D2,D3)

PAPER PASS - SILL DETAIL

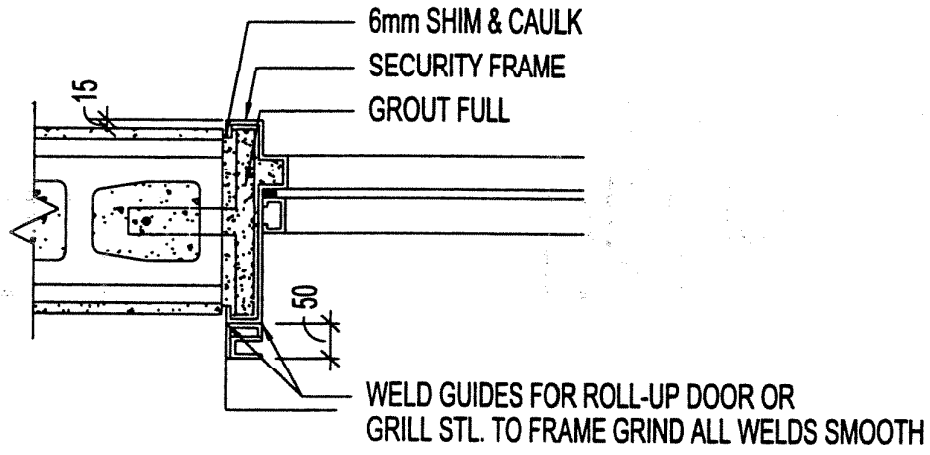
N.T.S. (CASHIER AND PHARMACY ONLY)



(FOR COORDINATION, SEE 08331-D1)

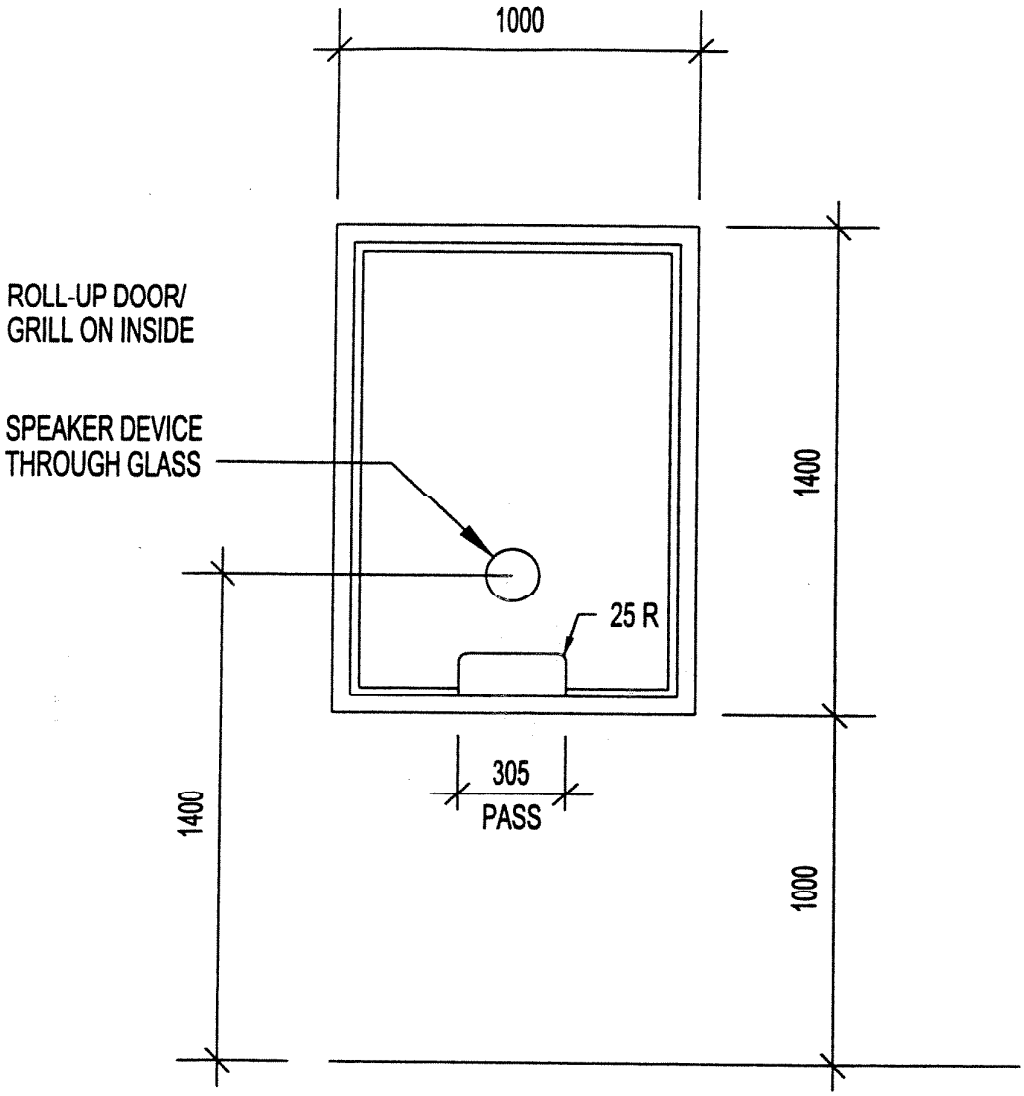
PAPER PASS - HEAD DETAIL

N.T.S.



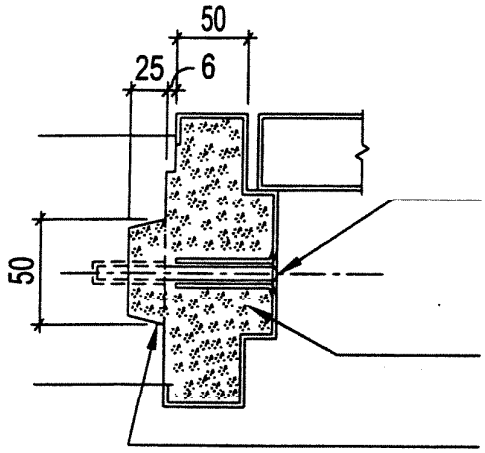
PAPER PASS - JAMB DETAIL

N.T.S.



PAPER PASS THRU WINDOW ELEVATION (A)

N.T.S.



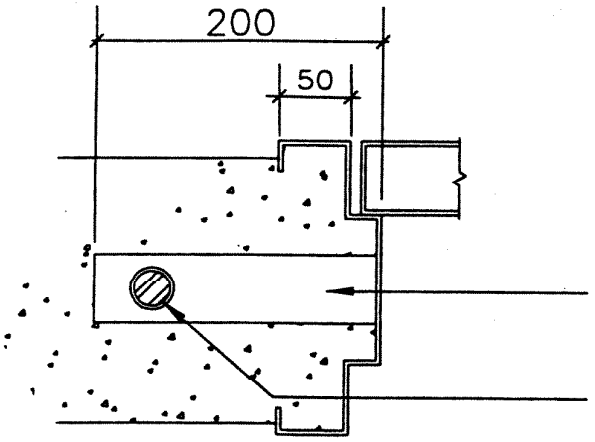
10mmØ EXP. ANCHORS - 2 REQ'D. @ HEAD MAX. JAMB SPACING 200mm ABOVE FLOOR, 200mm BELOW HEAD AND 400 O.C. MAX. TACKWELD BOLT TO FRAME

SECT. 03600 NON-SHRINK GROUT FILL

25mm DEEP x 75mm WIDE x 100mm LONG GROUT KEY (USE BEAD BOARD IN PRECAST CONC. FORM) BETWEEN EA. ANCHOR BOLT

JAMB DETAIL /PRE-CAST INSTALLATION

N.T.S.

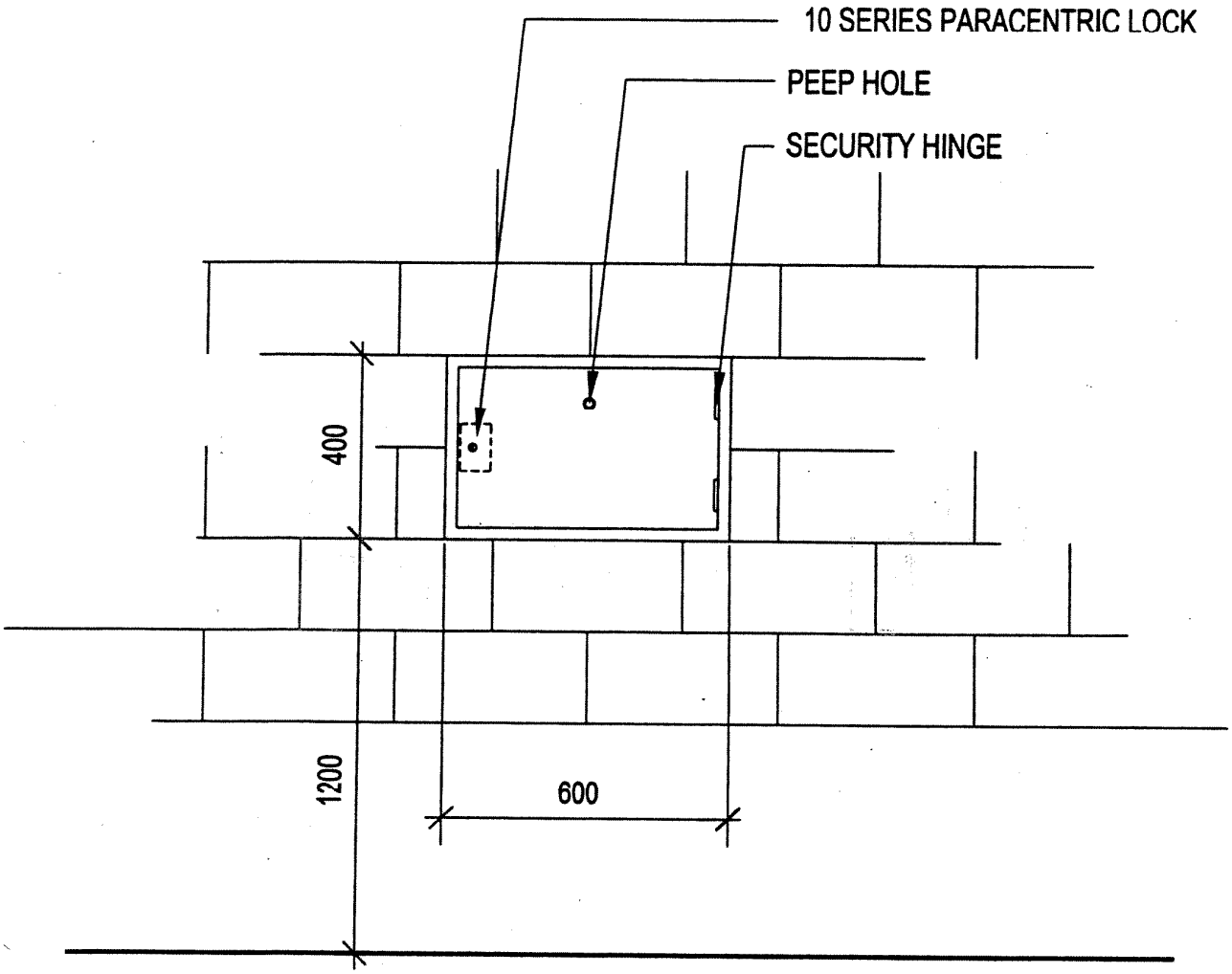


2.3mm STEEL ANCHOR WELDED TO FRAME - SEE 11191-D4 FOR REQUIRED SPACING

CONTINUOUS VERTICAL REINFORCEMENT THROUGH ANCHOR

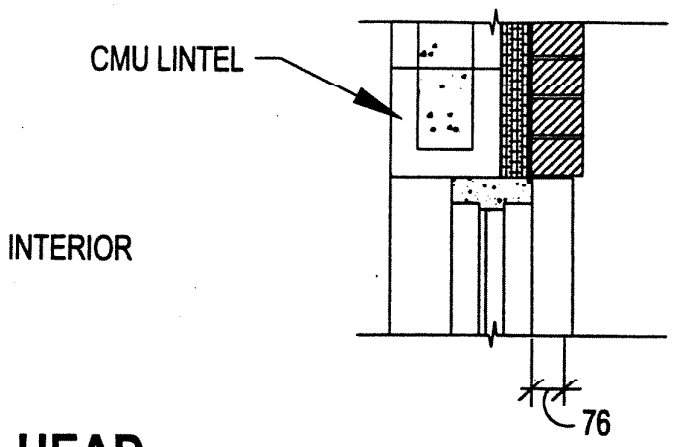
JAMB DETAIL - CAST-IN-PLACE INSTALLATION

N.T.S.

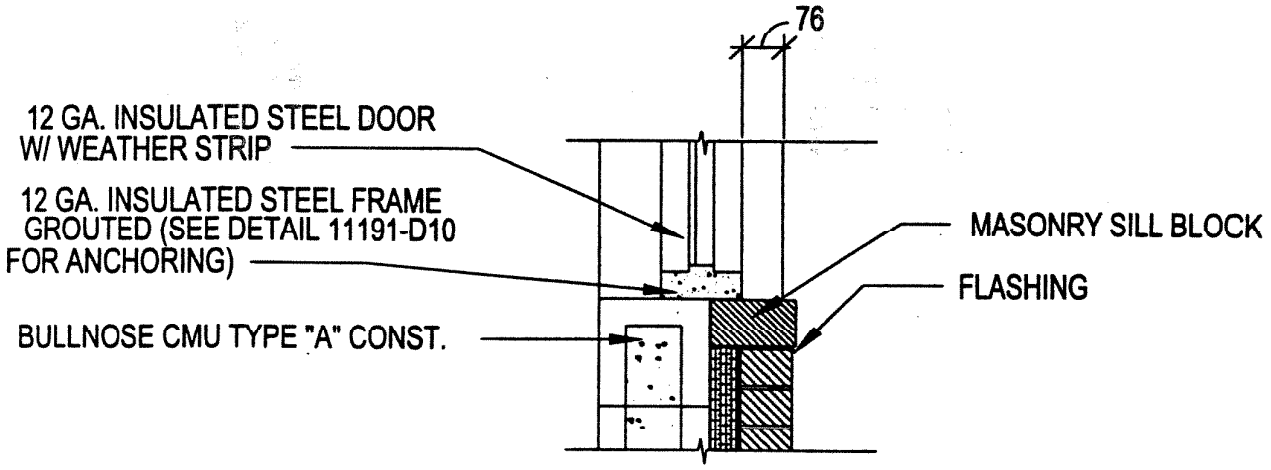


INTERIOR ELEVATION - ARMORY WEAPONS ISSUE DOOR

N.T.S.



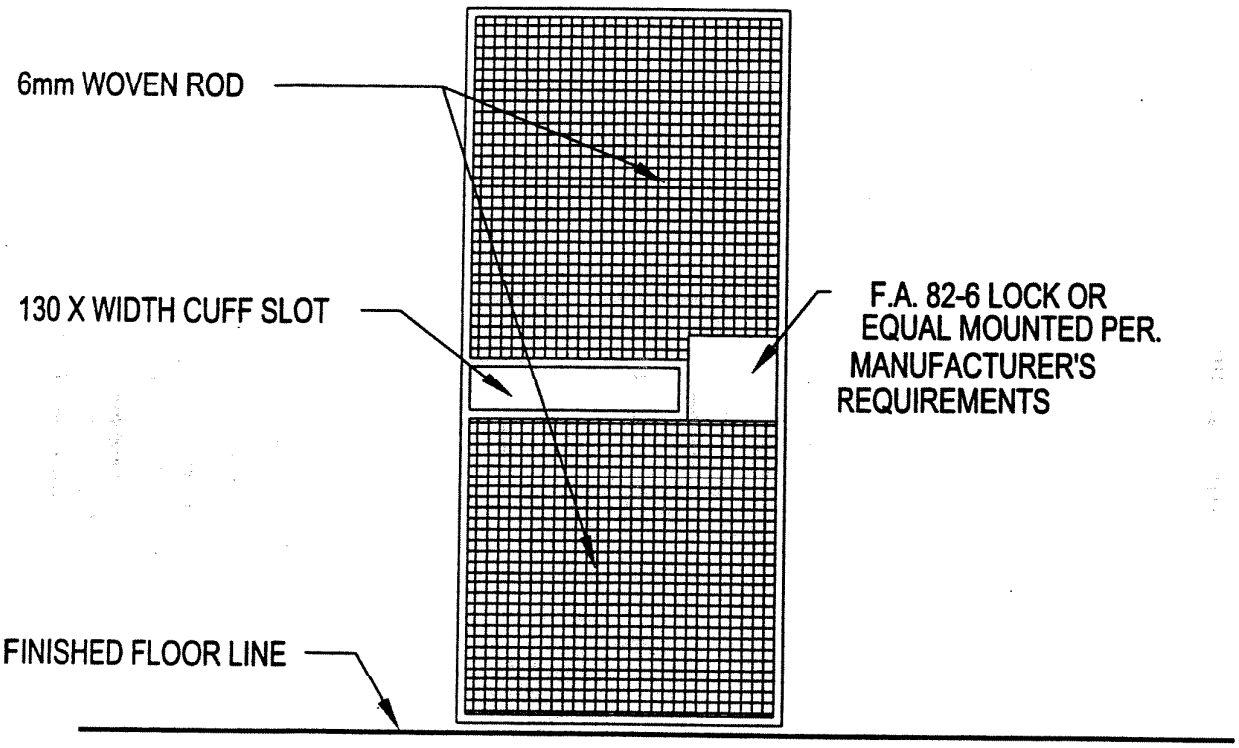
HEAD



SILL

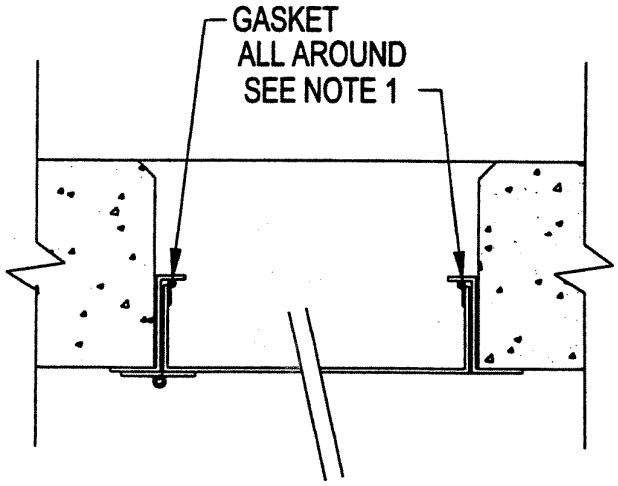
ARMORY WEAPONS ISSUE DOOR

N.T.S.



SPECIAL HOUSING OUTSIDE RECREATION GATE

N.T.S.

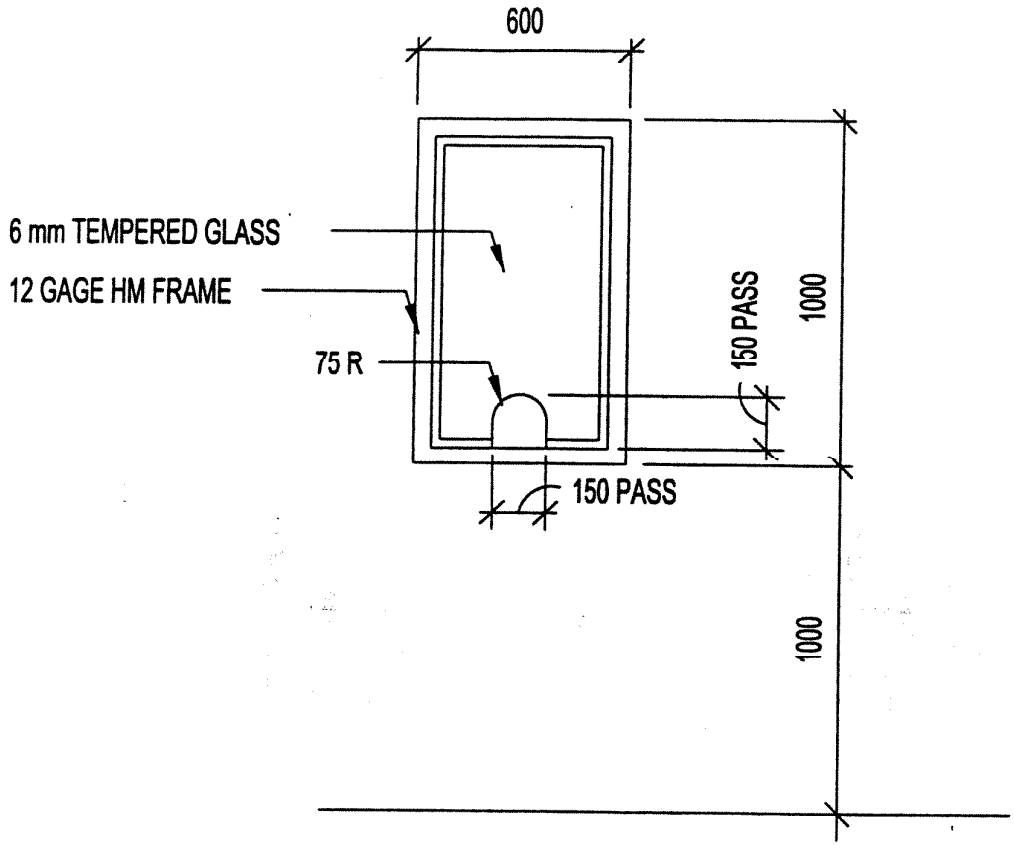


NOTES:

1. CHASE ACCESS DOOR TO BE FOLDED METAL WITH FRAME SUITABLE FOR GASKET SEALING.

CHASE ACCESS DOOR FRAME

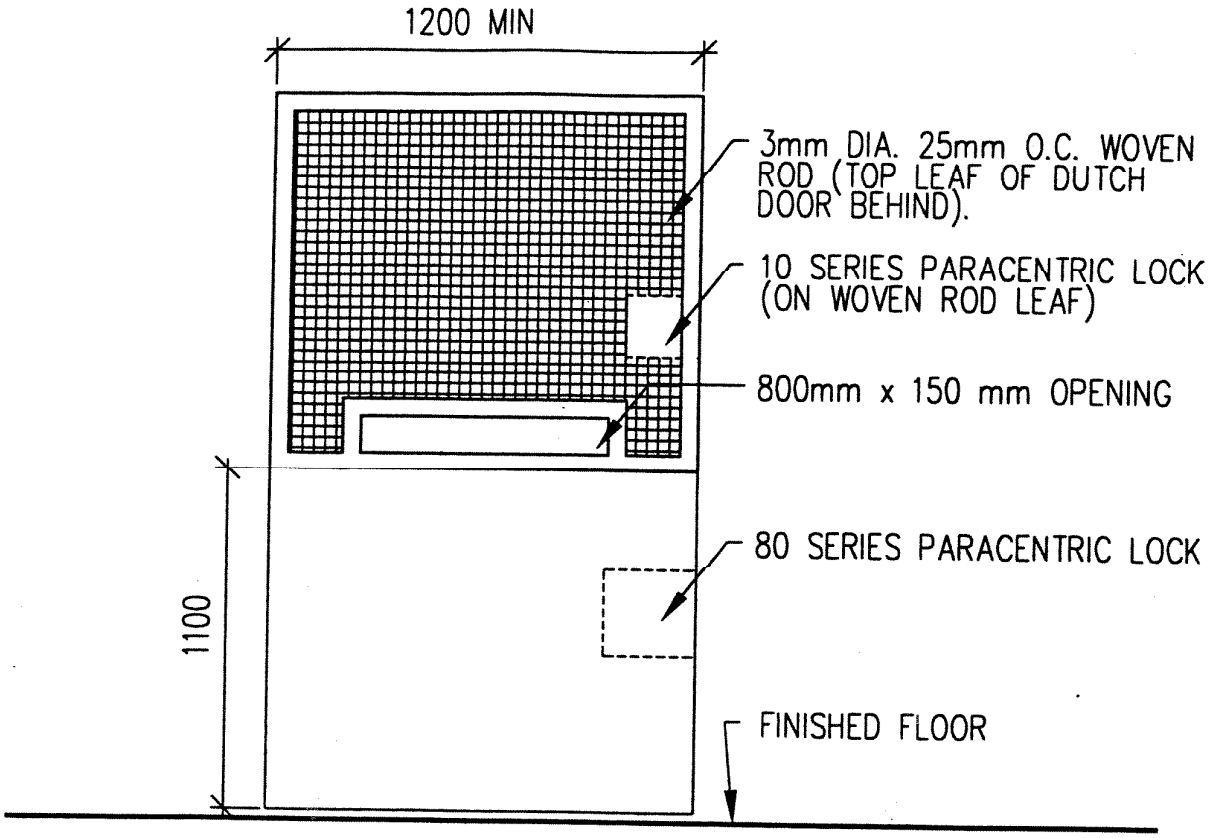
N.T.S.



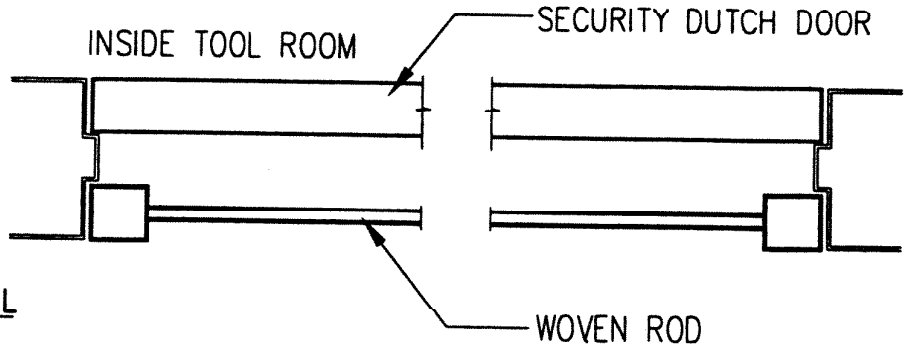
NOTE:
OVERHEAD COILING DOOR
MOUNTED ON PHARMACY SIDE.
SEE 08831-D1 FOR COORDINATION.

PHARMACY PASS THRU WINDOW ELEVATION

N.T.S.



ELEVATION



JAMB DETAIL

DUTCH DOOR DETAILS B TOOL ROOM

N.T.S.

SECTION 11192 - WOVEN SECURITY MESH PARTITIONS

REQUIREMENTS

A. Outdoor recreation enclosures at MDCs shall be constructed of security mesh to the following minimum specifications:

1. Frame: 44 mm (1-3/4 ") x 64 mm (2-1/2 ") x 10 ga. steel tube minimum. Maximum roof span shall be 3650 mm (12 foot) and support a 160 kg (350 lb) live load.

2. Infill Type: 9 mm (3/8 ") diameter 50 mm (2 ") o.c. woven rod. Each rod shall penetrate the frame and be welded to the frame at every rod. Rods shall not be fastened by clamps or anchors. This infill shall be used on sides and top of enclosures.

3. Finish: Galvannealed steel with a factory applied polyester powdercoat finish.

B. Outdoor recreation enclosures at USPs and FCIs shall be constructed of security mesh to the following minimum specifications:

1. Frame: 44 mm (1-3/4 ") x 22 mm (1-1/2 ") x 12 ga. steel channel minimum. Maximum roof span shall be 3650 mm (12 ') and support a 113 kg (250 lb) live load.

2. Infill Type: 6 mm (1/4 ") diameter 50 mm (2 ") o.c. woven rod. This will be used on all sides and top of enclosures. Rods shall not be fastened by clamps or anchors. This infill shall be used on the sides and top of enclosures.

3. Finish: Galvannealed steel with a factory applied polyester powdercoat finish.

C. Enclosures at Facilities Shops shall be constructed of security mesh to the following minimum specifications:

1. Frame: 25 mm (1 ") x 25 mm (1 ") x 14 ga. steel tube minimum or 25 mm (1 ") x 13 mm (½ ") x 3 mm (1/8 ") steel channel minimum. This will not be used for the top of the enclosure. Enclosure sides shall extend to the roof structure above.

2. Infill Type: 3 mm (1/8 ") diameter 50 mm (2 ") o.c. woven rod.

3. Finish: Finish shall be factory applied baked urethane.

D Enclosures at exterior stairs at General Housing units shall be constructed of security mesh to the following minimum specifications:

4. Frame: 25 mm (1 ") x 25 mm (1 ") x 14 ga. steel tube minimum or 25 mm (1 ") x 13 mm (½ ") x 3 mm (1/8 ") steel channel minimum. This will not be used for the top of the enclosure. Enclosure sides shall extend to the roof or stair landing structure above.

5. Infill Type: 3 mm (1/8 ") diameter 25 mm (2 ") o.c. woven rod.

6. Finish: Galvannealed steel with a factory applied polyester powdercoat finish.

END OF SECTION

SECTION 11195 - DETENTION EQUIPMENT

GENERAL

A. It is desired that the detention equipment subcontractor provide a "turnkey" package with a single source of responsibility for the following sections.

1. Security Glazing
2. Security Metal Doors and Frames
3. Detention Hardware
4. Security Fasteners
5. Detention Equipment
6. Security Access Doors

B. Provide factory-trained representatives for 5 consecutive working days to demonstrate equipment and instruct Owner's designated personnel in operation, repair, and maintenance of detention equipment.

C. WARRANTY: The subcontractor shall warrant his material and workmanship on this project for a period of 1 year from the date of acceptance by the Contracting Officer. The subcontractor agrees to repair or replace any defective materials, and to correct any defective security work, when given written notice by the Contracting Officer during this warranty period. The subcontractor also agrees to respond to these notices within 5 calendar days and make all repairs as required for proper operation during this warranty period.

D. Equipment items, components or accessories listed are intended to be the Basis of Bid. Any other manufacturers/brands proposed must conform with the specifications, size, accessories etc. of the first-named product. Substitutions must be submitted prior to execution of Contract.

E. Contracting officer reserves the right to accept or reject any or all substitution proposals before execution of Contract.

PRODUCTS

A. Provide the following metal detection system:

1. Provide material for microprocessor-controlled metal/weapon detection system that is designed to detect passing electrically conductive metal

objects of various sizes by means of a periodically pulsed magnetic field producing transient eddy currents in the metal objects being detected. No manual or automatic balancing shall be required, which will ensure a minimum personnel throughput rating of 50 per minute. Advanced processor-controlled signal processing shall be used to achieve the highest possible discrimination and sensitivity in sites having potential problems with environmental, electrical, and mechanical noise sources.

a. Manufacturer: Sentrie AT, EG&G Astrophysics Research Corporation.

2. Walk-Through Archway:

a. The coil geometry shall be switch-programmable by the user to accommodate the specific location of the metal detection system.
b. The electronic console shall be mounted in the overhead support of the archway structure with the AC connection and auxiliary connections provided at both the bottom and top of the archway structure.

(1) The electronic console may be placed outside the archway structure in "table-top" fashion.

c. The archway will be made of high-impact ABS plastic. Custom colors and decorative color-matched side panels must be available.
d. Positive mechanical and electrical connections shall be provided by the overhead support structure.
e. All coil wiring and wiring between coil panels shall be completely concealed
f. The coils shall be protected by a moistureproof coating and securely mounted to a rigid structure.
g. Any attempt to disconnect or tamper with the AC cord or signal cable shall produce a tamper alarm.
h. Walk-through direction shall be bi-directional.
i. No special walkway ramp or structure shall be required over a normal floor surface.
j. No special shielding or floor plates shall be required.

3. Electronic Console: The electronic components in the console shall be solid-state and passive components of high quality and most recent design. The system shall be modular in nature with easily accessed

printed circuit boards (PCBs) and other components to provide for simple maintenance and update. The system shall include the following:

a. The front panel shall provide all the necessary controls and indicators required by the user. The front panel will be covered by a sealed plastic overlay panel with tactile feedback controls for program selection and have LED visual indicators easily discernible by the operator. This panel will be water-resistant and easy to clean.

b. Front Panel Indicators:

(1) Color-coded "Alarm", "Tamper", and "Ready" displays will show system operational status.
(2) A horizontal ten-display LED signal level indicator will show relative metal content in the archway, as well as system activity indications.
(3) The volume, program, and sensitivity levels will be displayed by visually oriented seven-segment LED displays.
(4) Two separate and distinguishable audible alarms shall be provided for the alarm and tamper conditions.
(5) A different audible alarm tone frequency for each detector can be set by the user if several metal detection systems are being used in the same vicinity, or in series.

c. Front Panel Controls:

(1) An on/off switch shall be mounted on the front panel above the safety fuse.
(2) A spare fuse will be included inside each console for quick replacement by the operator.
(3) The volume, program, and sensitivity programming buttons will be controlled from the "Run/Program" keylock switch for programming security.
(4) A "Tamper Acknowledge" button will be provided to allow the change from a constant tamper annunciation to a periodic annunciation while the tamper source is being sought.
(5) A "Special" programming mode using the "Tamper Acknowledge" button will be provided for the selection of special features. This mode allows the operator to

customize the sensitivity according to specific site problems concerning:

(a) High or low noise levels
(b) Power Miser Program™
(c) Remote operation.

(6) The use of this "Special" mode shall be at operator's discretion and will not interface with the simple controls provided for the standard programming feature of volume, security level, and sensitivity.

(7) A microprocessor-driven self-test feature on the front of the console panel can be activated by the operator to confirm normal operational status of the unit. The seven-segment display will show a number in the sensitivity window to designate a specific fault or problem, if any. Check manual for further instructions.

d. Auxiliary function outputs will be provided at the rear of the electronics console for:

(1) Battery operation
(2) Alarm relay contact
(3) System inhibit
(4) Diagnostic test point
(5) Synchronization and serial communications.
(6) No external blanking inputs are required, and synchronization inputs are provided only when the standard "no cable" synchronization feature is not used.
(7) Internal controls and indicators will be used for:
(8) Switch selection for operation at 115 VAC or 230 VAC, 45-65 Hz
(9) LED indication to show serial communication activity

4. Signal and Power Cable: A minimum of 1800 mm of 115/230 VAC power cable shall be provided for the metal detection system. If the electronic console is not mounted in the archway structure, a signal cable of a maximum length of 6000 mm will also be provided.

5. Operation/Package Description:

   a. Size: 88 mm (EIA) x 475 mm (EIA) x 200 mm, in top-mount version. Table-top console will be about 325 mm deep. The EIA dimensions are those required by a standard rack-mount unit.
   b. Color: Unless otherwise specified by user, standard color combination shall use DNTI beige and other contrasting colors. Custom color choices and decorative packages are available as an option.
   c. Weight: Stand-alone console is 9 kg maximum. Archway with console in top is 68 kg maximum.
   d Power: 100 VA maximum; 115/230 VAC ±20 percent; 45-65 Hz.
   e. Environmental: -10°C to 55°C, up to 95 percent relative humidity. Conforms to NILEC-STD-601.00 or equivalent. Meets FCC Class A standards for emissions.

6. Quality Control: The manufacturer or supplier shall furnish a product liability insurance certification that shall ensure coverage of at least $6 million, but not less than the amount required by FAR.

B. Refer to Section 11196 - SECURITY FASTENERS for requirements for security fastening requirements.

C. Refer to Section 11030 - TELLER AND SERVICE EQUIPMENT and other Division 11 Sections for more details of security equipment.

D. Refer to Section 10801 - TOILET AND BATH ACCESSORIES for Detention Toilet Accessories.

SECTION 11196 - SECURITY FASTENERS

GENERAL

A. REQUIREMENTS FOR SECURITY FASTENERS

1. The following equipment shall be equipped with security fasteners (pinned Torx) provided by the respective manufacturers:

   a. All control panels in the central control.
   b. Kitchen equipment.
   c. Medical equipment.
   d. Laundry equipment.
   e. Elevator cab and control panels

2. The following detention equipment shall fastened using flush "break-off" head style fasteners:

   a. All paracentric lock mounting plates.
   b. Detention door hinges
   c. Glazing stops in inmate cells where the stop is accessible to the inmate.
   d. Glazing stops for all openings penetrating secure walls.

3. Pinned Torx head screws shall be used for all exposed fasteners in secure areas such as inmate general housing and special housing. Pinned Torx fasteners shall be used for all installed furnishings and equipment including (but not limited to) security light fixtures, annunciator panels, FECs, floor drains, air diffusers, etc.

4. Security fasteners are not required for the following:

   a. Mechanical, electrical, generator, elevator equipment, or communications equipment and rooms, including roof-mounted equipment.
   b. Above suspended ceilings, behind access panels, and within pipe or duct chases.
   c. Movable furnishings, storage shelving, cabinet hardware.
   d. Drywall screws.
   e. Builders hardware outside the secure perimeter

B. SUBMITTALS

1. Submit shop drawings showing type and location of each type of security fastener.

C. QUALITY ASSURANCE

1. All security fasteners shall be operable by tools produced for use on the specified security fasteners by the fasteners' manufacturers or other fabricators licensed by them.

2. The detention equipment subcontractor shall assume the responsibility of coordinating the type of security fasteners for this entire project with other subcontractors that shall be operable by no more than two different sets of tools. The detention equipment subcontractor shall furnish and install all security fasteners for security metal doors and frames, detention hardware, security glazing, detention accessories, security mesh partitions, and security access doors. All other subcontractors shall furnish and install security fasteners for their respective work where applicable.

PRODUCTS

A. SECURITY FASTENERS

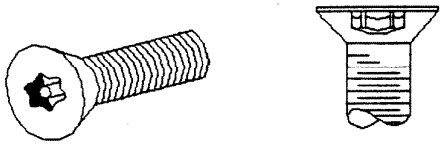
1. Security fasteners' head style shall be selected as appropriate for installation requirements, strength, and finish of adjacent materials. Size and shape variations shall be such that no more than two different tools/wrenches are required for all security screws on the project. Security fasteners shall consist of the following types and meet the following requirements:

   a. Types of security fasteners:

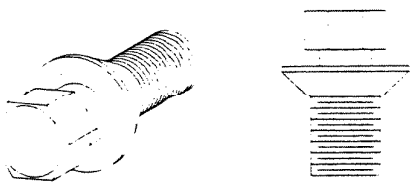
      (1) Pinned "Torx" head - deep hex-lobe recess with center pin. (Illustrated below)
      (2) Flush "break-off" head style.

   b. Diameter #4 through 19 mm (3/4 ")d.
   c. Material Black grade 9 alloy steel or austenitic (carbon) stainless steel or martensitic (hardened carbon) steel as required for particular strength or finish.
   d. Head Styles: Socket head cap, button, flat or low head as required by application or as indicated.
   e. Plating: Cadmium, zinc, nickel, phosphate, and chrome to match adjacent materials.

Pinned Torx Screw



Flush break-off screw



2. The detention equipment subcontractor shall deliver to the Contracting Officer six (6) complete sets of tools for security fasteners and a gross of each type of security fastener used on this project. Each set shall be packaged in a tool kit for easy handling and storage.

EXECUTION

A. INSTALLATION

1. Security fasteners as specified herein shall be obtained by the manufacturers, supplier, or installer of each component requiring their use, and it shall be their collective responsibility in coordination with the detention equipment subcontractor to ensure use of proper size and type of security screws for each required application.

2. Security fastener installation shall be the responsibility of whoever installs the fasteners under normal application conditions.

3. Use security fasteners for installation of items at security walls and elsewhere as indicated.

END OF SECTION

SECTION 11197 - DETENTION HARDWARE

PART 1

DETENTION HARDWARE REQUIREMENTS

A. Most projects for the Federal Bureau of Prisons will require all of the products specified in this section. However, the specifier should review the Model Section to determine that the project does include all of these items. Delete any products that are not shown in schedules or on the drawings. Coordinate model specification with the edited text and work shown on the drawings. Edit references listed to include only references that are used in the edited text of this Specification.

B. It is the desire of the Federal Bureau of Prisons that all of the work specified in this section be the responsibility of one sub-contractor. Sections should be edited to reflect this requirement.

C. It is the responsibility of the specifier to determine if each of the listed suppliers can produce products as specified in this section. Delete any manufacturers whose products are not specified in the edited section. Obtain approval of the Contracting Officer before listing any alternates to this list. Only manual institutional locksets and prison locks appearing on the list of MANUAL LOCKING MECHANISMS APPROVED FOR USE IN FBOP FACILITIES may be used in secure areas of FBOP facilities.

USE OF LEVER HARDWARE

A. Lever hardware shall be used to accommodate accessibility requirements of the Uniform Federal Accessibility Standards (UFAS). Lever hardware shall be used in doors in all areas where there is movement of inmates without assistance or supervision of FBOP staff. Levers should be used on all accessible inmate cells that are not locked with paracentric prison locks, single fixture toilet rooms, and all doors located on the accessible route as defined by the Uniform Federal Accessibility Standards section 4.3. All areas that are accessible to the general public, such as inmate visitation, main entry to the institution and public toilet rooms must also have lever hardware.

LABELED DOOR ASSEMBLIES

A. Spaces which require A or B security construction AND are required by code to have fire rated wall assemblies for separation from adjacent spaces, shall have a separate positive latching device in addition to the scheduled security hardware outlined in the matrix below. The latching device shall be a high security device similar in quality to the Heavy-Duty Pin Tumbler Mortise Lock specified herein. Latchset shall have an ANSI/ASTM 01 function. Other specified hardware shall comply with NFPA 80.

HINGES

A. All detention grade doors (HMMA 863) that are 900mm (36") or wider shall have at least 4 hinges.

LOCK/DOOR MATRIX

A. Following is a matrix indicating detention hardware locking requirements for FBOP facilities at all security levels. Spaces are listed in the same order as Facilities Development Technical Reference Manual TRM 021.01. Entries on the matrix indicate lock requirements, door and frame requirements and other information such as interlocking. Included are requirements for:

Minimum Security - Federal Prison Camps - FPC (Men's/Women's; and Work)
Low Security - Federal Correctional Institutions - FCIL
Medium Security - Federal Correctional Institutions - FCIM
High Security - U. S. Penitentiaries - USP
Federal Detention Centers - FDC

ABBREVIATIONS

A. Information used on the Lock/Door Matrix in this section utilizes the following abbreviated designations to indicate the locking device and door type for the program space listed:

1. LOCKING DEVICES/ACCESSORIES

P-80 Paracentric key cylinder - manual prison lock, 80-series
P-10 Paracentric key cylinder - manual prison lock, 10-series
M-## Mogul key cylinder - institutional mortise deadbolt lockset
C-## Commercial key cylinder - refer to ANSI/BHMA A156.5 (## refers to standard ANSI function number - example M-14 indicates a lockset with an ANSI # 14 function and a mogul cylinder)
K1 Cylinder is keyed on one side
K2 Cylinder is keyed on both sides
E-50 Electrically operated remote control lock - 50 series, jamb mounted
E-120 Electrically operated remote control lock - 120 series, jamb mounted
DPS Door position switch
BPS Bolt position indicator switch
BH Builder's Hardware - ANSI Grade

2. DOORS

DC# - Door Commercial grade (HMMA 861) # = gauge thickness of door
DS# - Door Security grade (HMMA 862) # = gauge thickness of door
DD# - Door Detention grade (HMMA 863) # = gauge thickness of door
Example: DD14 = Detention grade door built in accordance with HMMA standard 863 with a 14 gauge steel skin.

3. FRAMES

FC# - Frame Commercial grade (HMMA 861) # = gauge thickness of frame
FS# - Frame Security grade (HMMA 862) # = gauge thickness of frame
FD# - Frame Detention grade (HMMA 863) # = gauge thickness of frame
Example: FD14 = Detention grade frame, 14 gauge steel, built in accordance with HMMA standard 863.

A. The information on the top line of each listing on the matrix indicates the lock type required for that room or space. The information on the bottom line indicates the required door and frame type.

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Sample					
Example space	C-14 DC14 - FC14	P-80 K-2 (lock type) DD12 - FD12 (door and frame type)			
Lock and door indications will appear under the corresponding security level. In the above example, the C-14 lockset will be used in Low Security institutions. The P-80 lockset will be used at all levels from Medium Security through FDC. Additional misc information and special conditions will appear in the Notes column					

Security Hardware Matrix for SECURE FACILITIES (LOW, MEDIUM and HIGH security levels and Federal Detention Centers)

Program Space	Low Security	Medium Security	High Security	FDC	Notes
ADMINISTRATIVE AND SUPPORT - OUTSIDE SECURE PERIMETER					
Access via main pedestrian entry (at Admin Bldg...)	BH electric lock (Brinks 3520 or equal) K2 DC14 - FC14				Specify ½ cycle motorized lock
Pedestrian sallyport to secure compound (both doors)	E-50 K2 DD12 - FD12	Electric Slider K2 DD12			Electric hard wired interlock DPS at FCIL
Visitor sallyport to visiting room	N/A			Elec. Slider DD12	Electric hard wired interlock
Central Control Spaces					
Control center sallyport (lobby side)	E-50 K2 DD12 - FD12				PLC interlock DPS
Control center sallyport (control room side)	P-80 K2 DD12 - FD12				PLC interlock DPS
Electronic equip. room (comm spec work area)	P-80 K2 DD12 - FD12				DPS/BPS
Radio Room	N/A			P-80 K2 DD12-FD12	DPS/BPS
Central Utility Plant					
Class B tool Room	P-80 K2 DD12 - FD12 - Dutch door				Top leaf locks into bottom with P-10
Emergency Generator Room	P-80 K2 DD12 - FD12				
Main switchgear service/transformer vault	P-80 K2 DD12 - FD12				
Primary electric room	P-80 K2 DD12 - FD12				
Radio Room	P-80 K2 DD12 - FD12			N/A	DPS/BPS
Secondary electric room	P-80 K2 DD12 - FD12				
Computer Services					
SENTRY LAN room	P-80 K2 DD12 - FD-12				
Correctional Services					
Armory	P-80 K2 DD12 - FD12				Mount Armory door and grill in the same frame. Grill to be mounted on the armory side
Armory grill	P-80 K2 grill				Weapons pass in grill. PLC interlock with Squad room DPS BPS
Gun Locker	E-120 with mogul manual override K1				See Details 05500 - G2-G4 camera, intercom

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Locksmith shop	P-80 K2 DD12 - FD12				
Emergency squad room	E-50 K2 DD12 - FD12				PLC interlock required with Armory grille
Emergency squad equipment storage	P-80 K2 DD12 - FD12				
SIS offices	P-80 K2 DD12 - FD12				
SIS storage room	P-80 K2 DD12 - FD12				
Telephone monitoring equipment	P-80 K2 DD12 - FD12				
Telephone monitoring/listening	P-80 K2 DD12 - FD12				
Weapons pass through at Armory	P-10 K1 DD12-FD12				BPS w/ indicator light in armory
Financial Management					
Cashier's entrance door	M-14 DD12 - FD12				
Inmate telephone system (ITS) equipment room	C-14 DC14 - FC14				
Garage/Landscaping					
B Tool room	P-80 K2 DD12 - FD12 - Dutch door				Top leaf locks into bottom with 10 series prison deadbolt lock
Guard Towers					
Towers (perimeter)	N/A		E-50 K2 DD12 - FD12	N/A	
Human Resources					
Records storage	M-14 DC14 - FC14				
Warehouse Facilities					
Warehouse entrance	P-80 K2 DS14 - FS12				
Secure hot storage	P-80 K2 DD12 - FD12				
Commissary secure storage	P-80 K2 DD12 - FD12				
Hazardous materials storage	P-80 K2 DD12 - FD12				
Safety and sanitation secure storage	P-80 K2 DD12 - FD12				
INSIDE SECURE PERIMETER					
Access area for vehicles and services					
Tool room			P-80 K2 DD12 - FD12	N/A	
Rear entry sallyport - vehicle gates	Remote controlled gate operator Galvanized post and fence gate			N/A	Electric hard wired interlock
Rear entry sallyport - pedestrian gates	E-50 K1 Galvanized post and fence swinging gate			N/A	Electric hard wired interlock

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Service gate between fences	P-80 K2 with galvanized case Galvanized post and fence swinging gate			N/A	
Vehicular sallyport - service	N/A			See notes	Door and hardware configuration may vary with design. Contact FBOP for requirements.
Veh sallyport - trash removal	N/A			See notes	
Veh sallyport - US Marshals	N/A			See notes	
Access via enclosed corridor at USPs					
Circulation through corridor - cross corridor gates	N/A		Elec slider K2 Grills	N/A	
Emergency vehicle access to compound	N/A		See notes	N/A	Double leaf (HMMA 863), oversize to accommodate emergency vehicles P-80 K2
Entry into housing from corridor	N/A		Elec slider K2 DD12	N/A	
Commissary					
AIM room	P-80 K2 DD12 - FD12				
Commissary sales area	P-80 K2 DD12 - FD12				
Sales lobby	P-80 K2 DD12 - FD12				
Secure "hot" storage	P-80 K2 DD12 - FD12				
Storage & work area	P-80 K2 DD12 - FD12				
Correctional services					
Inmate holding cell	N/A		P-80 K1 DD12 - FD12		Food pass with P-10
Centralized Spaces - Shared by assembly, multi-use, Religious Services, Education, Psychology Services, Correctional Services (inside Secure Perimeter)					Where occupancy is over 50, use 80 series prison lock - regardless of wall type.
Food Service					
Chemical Storage	P-80 K2 DD12 - FD12				
Dining areas entrance from outside	P-80 K2 (for egress) DD12 - FD12				
Knife Locker - Tool cages (wall-mounted type)	Wall mounted type tool cage Standard cylinder, key retaining padlock				
Guard Towers					
Towers (perimeter)	N/A		E-50 K2 DD12 - FD12	N/A	
Health Services					
Entry Vestibule	P-80 K2 DD12 - FD12			N/A	
Waiting Area	N/A			P-80 K2 DD12 - FD12	

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Dental storage	P-80 K2 DD12 - FD12				
Medical Records	P-80 K2 DD12 - FD12				
Records Office	P-80 K2 DD12 - FD12				
Pharmacy	P-80 K2 DD12 - FD12				Food pass with P-10
Pharmacy Storage	P-80 K2 DD12 - FD12				
Isolation vestibule	P-80 K1 DD12 - FD12				
Observation/isolation rooms	P-80 K1 DD12 - FD12				Food pass with P-10
Industrial Programming for Inmates UNICOR					
Main entrance	P-80 K2 DD12 - FD12				
A Tool room	P-80 K2 DD12 - FD12				
B Tool room	P-80 K2 DD12 - FD12 - Dutch door				Top leaf locks into bottom with P-10
Roll up doors	Standard cylinder, key retaining padlock locks (two)				
Inmate Housing					
General Housing					
Case Manager office	M-14 DD12 - FD12				
Conference/meeting	M-14 DD12 - FD12				
Counseling room	M-14 DD12 - FD12				
Egress - exits	P-80 K2 (outside door of stairwell) K1 (inside door, keyed to outside) DD12 - FD12			E-50 K1 DD12 - FD12	FDC egress stairs require DPS
Inmate cells	Open cubicles	P-80 K1 DD12 - FD12			Food pass with P-10
Janitor closet	M-14 DD12 - FD12				
Main entrance to unit (exterior door)	P-80 K1 DD12 - FD12		Elec Slider DD12 - FD12	P-80 K2 DD12 - FD12	Sallyport at High Security, operated from central control
Main entrance to unit (interior door)	P-80 K2 DD12 - FD12			N/A	
Mechanical chase	P-10 K1 Security access door (FA - SS)				Use either 11 gauge(min) access panels or 14 gauge security hollow metal doors
Mechanical rooms	P-80 K2 DD12 - FD12				
Staff/visitor toilet	M-14 DD12 - FD12				
Storage room	M-14 DD12 - FD12				
TV/Activity Room	M-14 DD12 - FD12				

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Unit files	P-80 K2 DD12 - FD12				
Unit Manager office	M-14 DD12 - FD12				
Unit Secretary	P-80 K2 DD12 - FD12				
Special Housing					
Access doors (SHU)	P10 K1 Security access door				
Atty/client	P-80 K2 DD12 - FD12				Door must swing out from inmate space and into corridor
Control door at end of cell range	P-80 K1 10mm (3/8") woven rod mesh door (mesh 50mm oc)				Food pass with P-10
Hearing room	P-80 K2 DD12 - FD12				Door must swing out from inmate space and into corridor
Egress - exits at stairs	P-80 K2 (outside door of stairwell) K1 (inside door, keyed to outside) DD12 - FD12			E-50 K1 DD12 - FD12	FDC egress stairs require DPS Food pass with P-10 on inside door
Interview room	P-80 K2 DD12 - FD12				Door must swing out from inmate space and into corridor
Janitor's closet	M-14 DD12 - FD12				Door must swing out from inmate space and into corridor
Law library	P-80 K1 DD12 - FD12				Door must swing out from inmate space and into corridor
Medical exam room	P-80 K2 DD12 - FD12				Door must swing out from inmate space and into corridor
Multi purpose rec rooms	P-80 K1 DD12 - FD12				Door must swing out from inmate space and into corridor
Outdoor recreation	P-80 K1 see note	P-80 K1 10mm (3/8") steel woven rod			Galvanized post and fence at low security only
Personal property storage	P-80 K2 DD12 - FD12				Door must swing out from inmate space and into corridor
Segregation/detention cells	P-80 K1 DD12 - FD12		Elec slider DD12	P-80 K1 DD12 - FD12	Food Pass with P-10 Speaker port
SHU entrance doors (exterior)	E-50 K1 DD12 - FD12		Elec slider DD12		Sallyport required with PLC interlock DPS
SHU entrance doors (interior)	P-80 K2 DD12 - FD12				Sallyport required with PLC interlock DPS BPS
SHU control room	M-14 DD12 - FD12				
Staff toilet	M-14 DD12 - FD12				
Storage	M-14 DD12 - FD12				Door must swing out from inmate space and into corridor
Strip Search	P-80 K1 Grill				
Inmate Systems Management - Receiving and Discharge					
Data room	P-80 K2 DD12 - FD12				
Entrances to R&D suite	P-80 K2 DD12 - FD12				

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Holding cells	P-80 K1 DD12 - FD12				Food Pass with P-10 Speaker port
Inactive file room	P-80 K2 DD12 - FD12				
Mail room	P-80 K2 DD12 - FD12				
Personal property storage	P-80 K2 DD12 - FD12				
Records office	P-80 K2 DD12 - FD12				
Sallyport from Marshall's	N/A			E-50 K2 DD12 - FD12	
Laundry Services					
Laundry storage	P-80 K2 DD12 - FD12				
Maintenance Shops (Facilities)					
Entrance to Facilities (main)	P-80 K2 DD12 - FD12				
A Tool room	P-80 K2 DD12 - FD12				
B Tool room	P-80 K2 DD12 - FD12 - Dutch door - see detail in Sec 11191				Top leaf locks into bottom with P-10 Additional grill on upper half swinging away from tool room
Electronics shop	P-80 K2 DD12 - FD12				
Multi- Use Areas					
Assembly/auditorium Multi-use/multi purpose	P-80 K2 or C-14 DS14 - FD12				Required lockset determined by occupant load of space
Recreational Services					
Passive rec Indoor Active rec	P-80 K2 or C-14 DS14 - FD12				Required lockset determined by occupant load of space
Religious Services					
Lobby Chapel	P-80 K2 or C-14 DS14 - FD12				Required lockset determined by occupant load of space
Safety and Sanitation					
Entrance	P-80 K2 DD12 - FD12				
Secure hot storage	P-80 K2 DD12 - FD12				
Visiting Rooms					
Entrance	P-80 K2 DD12 - FD12		E-50 DD12-FD12		
Non contact	P-80 K1 DD12 - FD12				
Inmate strip search	P-80 K2 DD12 - FD12				
Vending Storage	M-14 DS14 - FD12				

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Vocational Training					
Vocational training shops	P-80 K2 or C-14 DD12 - FD12		N/A		Required lockset determined by occupant load of space
B Tool room	P-80 K2 DD12 - FD12 - Dutch door		N/A		Top leaf locks into bottom with P-10
Warehouse Facilities (inside secure perimeter)					
Warehouse	P-80 K2 DD12 - FD12			N/A	
Miscellaneous requirements					
Elevator equipment rooms	M-07 DD12 - FD12				
Electrical - electronic rooms	M-14 K2 DD12 - FD1				BPS/DPS in electronic equipment rooms only
Mechanical rooms	M-14 K2 DS12 - FS12				

Security Hardware Matrix for NON-SECURE FACILITIES (Men's, Woman's and Work Camps)

Program Space	FPC		Notes
	WORK	Male/Female	
ADMINISTRATIVE AND SUPPORT			
Access via main pedestrian entry (at Admin Bldg.)	C-14 or exit device DC14 - FC14		
Central Control Spaces			
Electronic equip. room (comm spec work area)	P-80 K2 DD12 - FD12		
Message Center	M-14 DD12 - FD12		
SENTRY LAN room	P-80 K2 DD12 - FD-12		
Commissary			
AIM room	N/A	P-80 K2 DD12 - FD12	
Commissary sales area	P-80 K2 DD12 - FD12		
Sales lobby	N/A	P-80 K2 DD12 - FD12	
Secure "hot" storage	N/A	P-80 K2 DD12 - FD12	
Storage & work area	P-80 K2 DD12 - FD12		
Centralized Spaces - Shared by assembly, multi-use, Religious Services, Education, Psychology Services, Correctional Services			Where occupancy is over 50, use ANSI type 3 exit device.
Food Service			
Secure storage	P-80 K2 DD12 - FD12		

Program Space	FPC		Notes
	WORK	Male/Female	
Chemical Storage	P-80 K2 DD12 - FD12		
Dining areas entrance from outside	BH exit devices(panic hardware) DC14 - FC14		
Knife Locker - Tool cages (wall-mounted type)	Wall mounted type tool cage Key retaining padlock		
Health Services			
Medical Records	N/A	P-80 K2 DD12 - FD12	
Dispensing room	N/A	P-80 K2 DD12-FD12	
Isolation vestibule	N/A	P-80 K2 DD12 - FD12	
Observation/isolation rooms	N/A	P-80 K1 DD12 - FD12	Food pass with P-10
Inmate Housing			
General Housing			
Case Manager office	C-14 DS14 - FS14		
Conference/meeting	C-14 DS14 - FS14		
Counseling room	C-14 DS14 - FS14		
Egress - exits	Alarmed BH exit devices (panic hardware)		
Inmate cells	Open cubicles or dormitory		
Janitor closet	C-14 DS14 - FS14		
Main entrance to unit	BH exit devices DS14 - FS14		
Mechanical rooms	C-14 DS14 - FS14		
Staff/visitor toilet	C-14 DS14 - FS14		
Storage room	C-14 DS14 - FS14		
TV/Activity Room	C-14 DS14 - FS14		
Unit files	M-14 DS14 - FS14		
Unit Manager office	C-14 DS14 - FS14		
Unit Secretary	C-14 DS14 FS14		
Inmate Systems Management - Receiving and Discharge			
Data room	N/A	P-80 K2 DD12 - FD12	
Entrances to R&D suite	N/A	P-80 K2 DD12 - FD12	
Holding cells	N/A	P-80 K1 DD12 - FD12	Food Pass with P-10 Speaker port

Program Space	FPC		Notes
	WORK	Male/Female	
Inactive file room	N/A	P-80 K2 DD12 - FD12	
Mail room	N/A	P-80 K2 DD12 - FD12	
Personal property storage	N/A	P-80 K2 DD12 - FD12	
Laundry Services			
Laundry storage	N/A	P-80 K2 DD12 - FD12	
Multi- Use Areas			
Assembly/auditorium Multi-use/multi purpose	P-80 K2, C-14, or exit device DS14 - FS14		Required lockset determined by occupant load of space
Recreational Services			
Passive recreation Indoor Active recreation	P-80 K2, C-14 or exit device DS14 - FS14		Required lockset determined by occupant load of space
Religious Services			
Lobby Chapel	P-80 K2, C-14 or exit device DS14 - FS14		Required lockset determined by occupant load of space
Visiting Rooms			
Entrance	BH exit device DC14 - FC14		
Inmate strip search	P-80 K2 DD12 - FD12		
Vocational Training			
Vocational training shops	P-80 K2, C-14, or exit device DS14 - FS14		Required lockset determined by occupant load of space
Miscellaneous requirements			
Electrical - electronic rooms	M-14 DD12 - FD12		BPS/DPS in electronic equipment rooms only
Mechanical rooms	M-14 DD12 - FD12		

MANUAL LOCKING DEVICES APPROVED FOR USE IN FBOP FACILITIES		
Paracentric Locks - 10 series		
Manufacturer	**Model Number - Keyed 1 side**	**Model Number - Keyed 2 sides**
Southern Steel	1010-1 (6-tumbler)	1010-2 (6-tumbler)
Folger Adam	FA 12-6	FA 16-6
Brinks	7012	7016
Adtec	4016-705	1016-708
Airteq	5016-K1	5016-K2
Paracentric Locks - 80 series		
Manufacturer	**Model Number - Keyed 1 side**	**Model Number - Keyed 2 sides**
Southern Steel	1080/T6-1	1080/T6-2
Folger Adam	82-6	86-6
Brinks	7082	7086
Adtec	4086-705	4086-708
Airteq	5086-K1	5086-K2
Mogul Locks		
Manufacturer	**Model Number - Keyed 1 side**	**Model Number - Keyed 2 sides**
Southern Steel	10110 (specify to key 1 side)	10110 (specify to key 2 sides)
Southern Steel	10500 (specify to key 1 side)	10500 (specify to key 2 sides)
Folger Adam	110-01	110-02
Brinks	1020K1S	1020K2S
Adtec	2110 (specify to key 1 side)	2110

PART 2

DETENTION HARDWARE MODEL SPECIFICATION

DESCRIPTION

A. Work under this section includes labor, materials, equipment, transportation, and services necessary to furnish and install detention hardware and door lock control systems, and shall include the following items:

1. Embedded items such as weld plates and embedded frames.
2. Detention hardware, keys, and accessories.
3. Door control relay cabinets and interconnecting wires between the controlled and monitored doors and relay cabinets.
4. Input/output terminal strips for interface to central processing equipment.

REFERENCES

A. AIA A305 — Contractor's Qualification Statement.

B. ANSI/BHMA A156 — Hardware Standards.

C. ANSI/BHMA A156.18 — Materials and Finishes.

D. AWS D1.1 — Structural Welding Code Steel.

E. HMMA 861, 862, 863 — Minimum Standards.

SUBMITTALS

A. Shop Drawings: Show quantities, types, and locations. Construction shall be fully detailed, showing weights of material, finish, framing, reinforcing, and anchoring of detention hardware.

B. Operation/Maintenance Manuals: Furnish two (2) copies of parts catalog, maintenance, and operating manuals for detention hardware and door lock control system. These manuals shall be precisely expressed, clear, and specific.

C. Templates: Promptly provide the hardware manufacturer's templates to the metal door and frame manufacturer.

D. Submit operating and maintenance data:

1. Wiring Diagrams: Furnish complete reproducible copies of as-installed single-line electrical wiring diagrams for gate operating systems, locking devices, and monitoring systems.

2. Maintenance manuals, including:

a. Parts list of replaceable parts, including manufacturers part numbers.
b. Lubrication requirements.
c. Complete information covering items of equipment and operation, including adjustment instructions for variable controls.

DELIVERY, STORAGE AND HANDLING

A. Delivery and Storage: Doors shall be shipped individually packed. Frames shall be shipped with angle spreaders at door opening bottoms. Store doors and frames on building site, in an upright position, under cover, on wood sills or floors and in a manner that prevents rust or damage. Ventilate canvas or plastic covers to prevent moisture traps.

B. Packing and Marking: Each item of detention hardware shall be packaged and marked according to set numbers on the approved hardware schedule. Shipping cartons shall be marked "Security Hardware."

QUALITY ASSURANCE

A. Acceptable Installation: The detention equipment subcontractor will provide a "turnkey" package with a single source of responsibility for the following sections:

1. Security metal doors and frames.
2. Detention hardware.
3. Security glazing.
4. Detention equipment
5. Security fasteners.
6. Security access doors.

B. The detention equipment subcontractor shall submit qualifications of experience to the Contracting Officer, and a properly executed Contractor's Qualification Statement on AIA Document A305.

C. Provide factory-trained representatives for a minimum of five (5) consecutive working days to demonstrate equipment and instruct Contracting Officer's designated personnel in operation, repair, and maintenance of detention hardware and door lock control system.

D. Warranty: The subcontractor shall warrant his material and workmanship for a period of one (1) year from date of acceptance by the Contracting Officer. The subcontractor agrees to repair or replace any defective materials and to correct any defective security work when given written notice by the Contracting Officer during this warranty period. The subcontractor also agrees to respond to these notices within five (5) calendar days and make all repairs as required for proper operation during this warranty period.

EMBEDDED ITEMS

A. Embedded items shall be mild steel shapes and plate and, where required, shall be 5 mm or 6 mm, and shall comply with ASTM A366.

DETENTION HARDWARE

A. Furnish detention hardware, conduit system, wiring, and accessories for a complete security system to function properly as specified. Furnish templates of hardware if required by other contractors. Security hardware and accessories shall be furnished for a complete security system to properly function as specified. Wiring diagrams of electric locks, door position switches, and other related electrically operated equipment shall be furnished to the contractor for his use. Break-off-type fasteners shall be used for installation of all prison locks using the prison paracentric key, and for installation of the cover plates associated with these locks. After fastener head has been twisted off, grind smooth and prep for finish. Pinned Torx head screws shall be used at all other hardware installations.

B. System Description: Design electrical locks, except as noted otherwise, to retract the latchbolt by either solenoid operation for exterior doors or by motor operation for interior doors. Exterior doors are to receive galvanized locks.

1. Electric locks for swinging doors shall automatically retract the latchbolt on opening the door and automatically deadlock on closing, except for doors used for emergency egress.
2. Electric locks shall have mechanical override feature by means of a paracentric or mogul key at the door.
3. Doors with electric locks shall have a door position switch to indicate the open or closed position of the door and a heavy-duty door closer.
4. Electrical doors, door position switches, keeper switches, and locking accessories shall have color-coded wires and a set of miniature cable plug connectors.

KEYING AND KEY CONTROL

A. Locksets shall be keyed individually or keyed alike in groups or sets. Furnish six (6) each keys for locks keyed individually or groups of locks keyed alike, whichever is greater. Keys shall be stamped with respective code numbers. Keying schedule shall be provided by Federal Bureau of Prisons.

B. Delivery of Keys: Manufacturer shall tag keys according to their corresponding locks and deliver directly to the Contracting Officer or his/her authorized representative and obtain signed receipt for same.

C. Keyways assigned to this project shall be proprietary for use only by the FBOP and as approved by the Federal Bureau of Prisons' Supervisory Security Specialist.

MATERIALS (manufacturers listed are for identification purposes and do not prohibit the use of other manufacturers' products that meet or exceed these specifications).

A. Security hardware applicable for all security levels:

1. Institutional Hinge — Folger Adam #4-1/2 FM ICS, Southern Steel Co #204 FM SS (Security Hollow Metal Door Hinge):

   a. Each hinge shall be 112 mm x 112 mm (4.4" x 4.4") with 6mm (0.24") thick leaves. Hinge leaves shall be investment cast from 304 stainless steel having a tensile strength of not less than 0.089 MPa (0.01 ksi) of cross-section.
   b. Hinge pins shall be stainless steel. Hinge pin shall be fully concealed, non-removable. Hinge pins held in place with set screws are not acceptable.
   c. Entire assembly shall be cross-pinned at assembly.
   d. Hinges shall be finished US32, US32D, or USP-PRIMED, as called for in the hardware schedule.
   e. Hinges shall be mounted security-type screws with flush break-off style heads of appropriate size and length.

2. Institutional Hinge — Folger Adam #5 Southern Steel Co #205 (Grille Door Hinge):

   a. Hinge shall be heavy-duty drop-forged steel, with two concealed thrust bearings with 25 mm (1") diameter balls. Knurled, hardened hinge pin is flush-fitted to prevent tampering and machined to provide an oil hole for lubrication. Hinges feature 50 mm (2") thick drop-forged steel leaves, and shall have an overall dimension of 125 mm x 175 mm (5" x 7").
   b. Hinges shall be mounted security-type screws with flush break-off style heads of appropriate size and length.

3. Institutional Hinge — Folger Adam #3, Southern Steel Co #203 FS (Security Access Panel, Food Pass Hinge):

   a. Hinge shall be heavy-duty 10 mm (0.4") malleable iron, featuring two concealed thrust bearings. 50 mm (2") knurled and hardened pin fitted flush to prevent removal. Overall dimension shall be 75 mm x 100 mm (3" x 4").

4. Hinge — Soss #4B499-35TBB (Security Access Panel Hinge):

   a. Hinge to be wrought steel, heavy weight — ball bearing with non-removable hinge pin. Size shall be 100 mm x 90 mm (4" x 3.5").

5. Door Pull — P/P X US32D (eg., Sallyport Door):

   a. Builders brass #290-3. Back-to-back mounting when two push/pulls are specified.

6. Door Pull — Folger Adam #2, Southern Steel Co #212B (eg., Special Housing Unit Cell Doors):

   a. Material: Manganese bronze; finish shall be approximately US32D.
   b. Two (2) 10 mm — 16 mm x 20 mm oval head spanner screws furnished for attaching; attachment holes are 195 mm (7.7") center to center; overall length 215 mm (8.5"); hand hold, 112 mm (4.4")long; clearance between grip and door, 40 mm (1.6").

7. Flush Pull — Folger Adam #4, Southern Steel Co #214B (eg., Sallyport Door, Plumbing Chase Door):

   a. Material: Manganese bronze; finish shall be approximately US32D.
   b. Dimensions: 100 mm x 125 mm (4" x 5"); pocket setback, 100 mm (4").
   c. Four (4) 25 mm — 20 mm x 8 mm oval head spanner screws furnished for attaching.

8. Escutcheon — Folger Adam #1, Southern Steel Co #218-1:

   a. Material: Manganese bronze; finish shall be approximately US32D.
   b. Size: 75 mm (3") diameter, 3 mm (0.1") thick.
   c. Fasteners: Two (2) 25 mm — 20 mm x 8 mm oval head spanner screws.

9. Strike — Folger Adam #119-4BC:

   a. Material: 3 mm brass face plate with 1.6-mm thick steel back box.
   b. Attach with #12-24 x 12 mm flat head security screws.

10. Keeper — Folger Adam #80-4C, Southern Steel Co #804C:

    a. Material: 5 mm steel face plate with 1-mm thick steel back box.
    b. Attach with 25 mm x 20 x 12 mm flat head security screws.

11. Cylinder Shield — Folger Adam #2CS, Southern Steel Co #219:

    a. Made from corrosion-resistant stainless steel and aluminum, the cylinder shield is designed to protect lock cylinders on exterior doors against snow, sand, or other foreign matter. Unit includes a Folger Adam #1, Southern Steel Co #218 escutcheon.

12. Cremone Bolt Set — Folger Adam #3800HM, Southern Steel Co 10380 series:

    a. Set for each door shall consist of three-point locking by the use of head and foot bolts and a deadlock for center locking. Head and foot bolts shall be 22 mm diameter hardened steel. These bolts shall be operated by the use of lever handle. Throw for head and foot bolt shall be a minimum of 20 mm. Receptacle for foot bolt shall be self-closing.

13. Deadlock - Folger Adam #82-6/#86-6, Southern Steel Co #1080T6-1 /1080T6-2:

    a. The lock case shall be made of drop-forged steel. The lock size shall be 140 mm x 95 mm x 38 mm (5.5" x 3.7" x 1.5"). The bolt size shall be not less than 19 mm x 50 mm milled from a solid cold-finished steel bar. Slide to be integral with bolt. Each bolt to have three (3) hardened tool steel inserts not less than 6 mm diameter, inserted into blind holes from the inside of lock. Inserts shall fill holes loosely so that they will turn against action of saws. The throw bolt shall be not less than 19 mm and shall be made of proper length to come flush with door frame when retracted.
    b. The lock shall be keyed one side or two sides and shall have six (6) spring-tempered hard brass tumblers with notched ends. Each tumbler shall be activated by flat phosphor bronze spring.
    c. The lock cylinder shall be made of polished alloy bronze having both hardness and tensile strength equal to mild steel. The cylinder shall extend 12.5 mm (½") beyond case and shall be grooved to match and guide similar grooves in key.
    d. These locks must first pass the following pressure test (which is required by the Federal Bureau of Prisons before and after installation): This test (using a torque wrench and a 19 mm crow's foot) consists of applying 1.2 joules of pressure to the lock bolt in the locked position. Pressure should be applied to the center of the lock bolt and then to the top and bottom of the lock bolt. If any lock fails the test, that lock shall be replaced with a lock that does meet the required test at no cost to the Government

14. Mechanical Deadlocks — Folger Adam #12-6 and #16-6, Southern Steel Co #1010T6-1/1010T6-2:

    a. The lock case shall be made of drop-forged steel. The lock size shall be 105 mm x 75 mm x 21 mm (4.1" x 3" x 0.8"). The bolt size shall be not less than 19 mm x 38 mm milled from a high-strength bronze or hardened steel. Slide to be integral with bolt. The throw bolt shall be not less than 19 mm and shall be made of proper length to come flush with door frame when retracted.
    b. The locks shall be keyed one side or two sides and shall have six (6) spring-tempered hard brass tumblers with notched ends. Each tumbler shall be activated by flat phosphor bronze spring.
    c. The lock cylinder shall be made of polished alloy bronze having both hardness and tensile strength equal to mild steel. The cylinder shall extend 12.5 mm beyond case and shall be grooved to match and guide similar grooves in key.

15. Prison Lock — Folger Adam #32D/#36D SSCo #:1030D-1 / #1030D-2

    a. A lever tumbler deadlatch for sliding doors. Deadlocks when door is closed by key and unlocks by key. Malleable iron case and steel cover. Latchbolt (hook style) — hardened steel. Deadlock activator — solid steel. Six (6) lever tumblers made of spring-tempered brass, activated by heavy-phosphor bronze springs. Key cylinder, one piece, bronze alloy with paracentric keying. Bolt size 12.5mm thick; bolt lift 15mm. Model 32D keyed one side; Model 36D keyed two sides.

16. Lock Mount — Folger Adam #HM, Southern Steel Co #HM:

    a. Prison locks on all hollow metal doors shall be mounted with Folger Adam lock mounting HM or equal. The lock shall be factory-attached to the mounting plate with four (4) flat head spanner screws. The protruding ends of the screws shall be ground smooth and flush with the surface of the plate, which shall be made of 5 mm x 175 mm x 250 mm (0.2" x 7" x 10") hot-rolled, pickled, and oiled steel, and shall be attached to door by eight (8) 6 mm — 20 x 12.5 mm flat twist-off head security screws. Edges of plate shall be neatly and uniformly beveled. Provide a Folger Adam #1, Southern Steel Co #218-1 escutcheon. The pocket for the lock and the framing for attaching the No. HM mounting shall be provided by the door manufacturer. The mounting plate shall fit flush with the face sheet of the door. Framing shall be 3 mm thick steel channel, formed or rolled.

17. Lock Mount — Folger Adam #P, Southern Steel Co #P:

    a. Pressed and welded 5 mm steel cover plate.
    b. Attached to the gate by means of flat twist-off head security screws.
    c. Use at chain link swinging gates with manually operated locks.

d. Plates shall be galvanized finish.
e. Provide a Folger Adam #1, Southern Steel Co #218-1 escutcheon.

18. Lock Mount — Folger Adam #G, Southern Steel Co #G:

a. Pressed and welded 5 mm steel housing.
b. Attached to the grille door by welding to horizontal grating bars.
c. Cover plate 5 mm steel attached to housing by security screws.
d. Finish shall be USP or galvanized if used on exterior doors.
e. Provide a Folger Adam #1, Southern Steel Co #218-1 escutcheon.

19. Heavy-Duty Pin Tumbler Mortise Lock with Mogul Cylinder — Folger Adam #112/#116, Southern Steel Co, 10514-1/10514-2:

a. Keyed one side or two sides; knob set operates the latch bolt; deadbolt is controlled by key. Cast alloy case and cover; alloy bronze or stainless steel deadbolt with two (2) hardened steel inserts.
b. Heavy-duty mogul cylinders with five (5) stainless steel pin tumblers. Tumbler engagement by stainless steel balls; solid brass knobs and roses.

20. Door Position Switch — Folger Adam #524, Southern Steel Co #22L-4:

a. Provide, where indicated on the Security Hardware Schedule, a door position switch to provide the following function: When door is ajar or open, a circuit shall be completed (or interrupted) by the switch contained therein, said circuit to activate (or deactivate) a warning device.
b. It shall be adjustable so that, when installed, it can complete the circuit before the door is opened far enough to provide vision from the room into the corridor. Where required, it shall operate in conjunction with limit switches in an electro mechanical lock so that the warning device may be activated by either or both.
c. The case shall be formed of 3.5 mm thick steel. The top of the box shall be sloped to prevent hiding of contraband, or flat where space limitations occur. The cover shall be securely fixed in place with tamper-resistant spanner screws. The box shall be not less than 205 mm (8") long x 75 mm (3") deep x 100 mm (4") high for sloping top or 50 mm (2") high for narrow jamb style.

21. Electromechanical Locks:

a Electromechanical Motorized Lock — Folger Adam #52MCLL/#56MCLL, Southern Steel Co #1051MD-1/1051MD-2:

b. Electromechanical Solenoid Lock — Folger Adam #52ECLL/#56ECLL, Southern Steel Co #1051E-1/1051E-2:

c. Electromechanical Solenoid Lock — Folger Adam #802ESLL /#806ESLL, Southern Steel Co #1050DS-1 /1050DS-2:

d. Electromechanical Lock — Brinks #3520 (½ cycle):

e. Electromechanical Motorized Lock — Folger Adam #122MMLL/#126MMLL, Southern Steel Co #10120AM-1 /#10120AM-2:

22. Vehicle Sliding Gate Opener — Folger Adam Type "J", Southern Steel Co #9100:

a. Function: When device is in the closed position, it shall be impossible to move the gate to the open position except by electrical or mechanical operators provided. Locking to be accomplished by means of a keyless locking device engaging each gate in three places located in the locking pilaster; when gate is in the open position, all openings in the locking column shall be completely closed Gate shall move not less than 150 mm (6") per second. Gate shall not exceed 455 kg (1003 lbs).

b. Locking Device Components and Housing: Provide supporting structure as detailed, connected with track box and housing, formed of two 200 mm (8") x 13.75# structural steel channels. Each gate to be hung on three trolley hangers. Provide 75 mm (3") I-beams across entire area of gate travel. Locking pilaster to be 100 mm (4") x 100 mm (4") x 13.0# H-beam, provided with 5mm removable cover plate, locked with Folger Adam #82-6 lock. Motor to be 1/3 HP, 208 VAC, three-phase. Motors shall be protected against overloads by thermal safety device. The gear motor will be supplied with a mechanical clutch and is adjustable to allow the device to be set to stall at a predetermined poundage to prevent damage to the electrical motor or other mechanisms when a force is applied against it. Motor Housing: Motor housing shall be nominal 4.5 mm thick sheet steel plate; weatherproof cover shall be 3.5 mm thick sheet steel. Track box and motor cover shall be hinged and fastened with security screws.

c. Controls: Gates shall be remotely controlled electrically from control center. The vehicle sallyport gates shall be interlocking so that only one gate may be opened at one time. In the event of power failure, the gate can be mechanically opened or closed by the use of paracentric key and emergency hand crank mechanism located at the pilaster at front of the leading edge of the gate.

d. Entire mechanism except the track, rollers, and drive train mechanism shall be painted with a rust-inhibitive primer

23 Vehicle Sliding Gate Operator — Tymetal Corporation Type "PLUSS":

a. SYSTEM FUNCTION: System is designed to operate overhead chain link fence sliding gate panel. When device is in the closed position, it shall be impossible to move the gate to the open position except by electrical or mechanical operations provided. Keyless locking to be accomplished by

means of a three point mechanical locking column. Gate shall move from the completely opened position to the completely closed and locked position at a rate of 12 m (39') per minute.

b. GATE SYSTEM MOTOR: Motors shall be 1/2 HP, 208 Volt, 3 Phase by a nationally recognized manufacturer. Motors shall be protected against overload, either by thermal or a current sensing overload device. Gear Box shall be manufactured as a single unit to perform the following functions: gear reducer (self enclosed gearhead shall consist of hardened steel machine cut worm and mating bronze gear running in oil bath. Oil shall be a #5100 specialty oil with a fluid pour point of -51°C (-60°F), 5 watt heat strip included). adjustable clutching device, manual release. Controller shall house all of the required gate logic components including; relays, limit switches and motor starters with overloads. Manual operation crank handle located in the motor box shall provide a single step engagement procedure for manual operation. Fold out handle located at ground level and crank gate opened or closed. Control circuit shall be 110 VAC and operating controller shall be fabricated using U.L. listed parts. Control wiring to be supplied by 24 VAC and operating controller shall be fabricated using U.L. listed parts. Positive limits attached to the gate operator, activating a NEMA 3 or larger limit switch from full open to full close.

c. MOTOR HOUSING: Motor Housing shall be waterproof. Motor box shall be constructed of 10 gauge galvanized steel, located at ground level for maintenance. Motor box shall have detention hinges and pinned Torx security screws. Motor box shall be locked with a prison lock. Provide three (3) paracentric keys per key code.

d. SYSTEM COMPONENTS: Track shall be heavy duty overhead shall consisting of two 200 mm (8") structural steel channels joined together as shown on the drawings, weighing a minimum of 50 kg/m (33.6 lb/ft). Trolleys shall be heavy duty shall be milled from a single block of steel and use two (2) sealed ball bearings per wheel, two (2) wheels per trolley. Each gate panel to be hung on two (2) or three (3) trolleys depending on gate opening width. Fill grade beam shall consist of a 76 mm x 2.6 kg (3" x 5.7 lb) galvanized steel I-beam across the entire area of gate travel installed flush with roadway surface and be provides with welded steel guides. Vertical support posts shall consist of two (2) sets (four (4) posts) support posts, and one motor box support post, of 100 mm (4") O.D. galvanized steel weighing a minimum of 9.7 kg/m 6.5 lb/ft in accordance with ASTM F 1043. The locking column is constructed of a 100 mm x 19 kg/m (4" x 12.8 lb/ft) "H" beam width removable steel cover, secured with security screws. Three locking tangs to be affixed to the leading edge of the gate panel to provide positive locking into the locking column. Openings in the locking column shall be completely closed when the gate is in the open position. Drive chain shall be #60 roller chain in a rack and pinion system. Gate guide angle shall consist of a 64 mm x 38 mm x 6 mm (2.5" x 1.5" x 0.24") steel angle attached to the bottom of the gate panel running it's full length.

e. Submittals - Shop Drawings: Show relationship of system with other work; include details of all major components. Include parts list showing manufacturers' names and part numbers for the complete installation. Show all switches, controls, motors, and other electrical components. Include wiring diagrams of the complete system as proposed to be installed.

f. Finish:
   (1) Entire mechanism except the track, rollers, and drive train mechanism shall be painted with a rust-inhibitive primer.
   (2) Sprockets, rollers, and drive assemblies shall be electrogalvanized or nickel-plated.

g. System Test:
   (1) Preparation: Have the Company Field Advisor adjust the completed system, and then operate it long enough to ensure that it is performing properly.
   (2) Run a preliminary test for the purpose of:
      (a.) Determining whether the system is in a suitable condition to conduct the acceptance test.
      (b.) Checking and adjusting equipment.
   (3) Preparation: Notify the FBOP Project Representative at least 3 working days prior to the test so arrangements can be made to have a facility representative witness the acceptance test.
   (4) Supply all equipment necessary for system adjustment and testing.
   (5) Submit a written report of the test results signed by a Company Field Advisor and the Contractor's Representative.

h. Operation and Maintenance Data: Deliver two (2) copies, covering the installed products, to the Contracting Officer. Include name, address, and telephone number of nearest fully equipped service organization.

i. Installation: Install the equipment in accordance with the company's printed instructions unless otherwise shown.

24. Remote Controlled Sliding Door Locking Device — Folger Adam #D (High Security Corridor Doors):

a. Components and Housing:
   (1) All motors shall be 1/4 HP, 208 VAC, 60 Hz, as manufactured by a nationally recognized manufacturer. This motor shall be protected by a thermal cutout.
   (2) All roller chain drives shall be #41 size.
   (3) Hanger guides shall be 6 mm thick steel plate and shall interlock with track support with a clearance of not more than 6 mm (0.24").
   (4) Hanger support rollers shall be trimmed from solid steel 95 mm O.D. grooved 9 mm deep. Rollers shall have anti-friction ball bearings with double grease shields. Roller studs shall be high alloy treated steel with eccentric bushing for adjustment of the door.

(5) The horizontal mechanism housing shall be 5 mm mild steel plate. Housing covers shall be 3.5 mm thick sheet steel with openings baffled.
(6) The vertical lock bar housing and cover shall be 4.5 mm thick sheet steel.
(7) The vertical lock bar cover shall be removable only when the horizontal cover has been removed.
(8) The emergency release cabinet shall be located at the point of the door.

b. Functions:
(1) The mechanism shall open or close a 600 mm (23.6") door in not more than five (5) seconds.
(2) Normal force exerted by a door in travel is approximately 18 kg (40 lbs). This force shall be field-adjustable by the use of a clutch.
(3) Device shall hold preset pressure on door at all times of operation regardless of voltage setting.
(4) In the event the door is blocked, the door shall automatically continue to the open or closed position when the obstruction is removed.
(5) The locking device shall be designed so that there will be no projecting lugs on the receiving column, or leading edge of door. Door shall automatically deadlock closed at two (2) points at the rear of the door. Door shall also automatically deadlock in the open position.
(6) Manual emergency locking, unlocking, and operation shall be accomplished by crank located in locking pilaster at the point of door. Cover manual release shall be secured with a Folger Adam #82-6 series lock.
(7) Maximum door weight, standard construction, is 225 kg (496 lbs). A door over 1500 mm (59") wide or heavier than 225 kg (496 lbs) can be accommodated with double roller assembly, 455 kg (1003 lbs) maximum weight.
(8) Red and green indicator lights on the control panel will indicate if the door is closed and locked (green) or in the unsecured position (red).
(9) Paint entire assembly, except track rollers and motor mechanism, with rust-inhibitive primer.

25. Remote Controlled Sliding Door Locking Device — Folger Adam #D5B (High Security Sallyport Doors and Corridors):

a Components and Housing:
(1) All motors shall be 1/10 HP, 115 VAC, as manufactured by a nationally recognized manufacturer. This motor shall be protected by a thermal cutout.
(2) All roller chain drives shall be #41 size.
(3) Hanger guides shall be 6 mm thick steel plate and shall interlock with track support with a clearance of not more than 6 mm (0.24").

(4) Hanger support rollers shall be trimmed from solid steel 95 mm O.D. grooved 9 mm deep. Rollers shall have anti-friction ball bearings with double grease shields. Roller studs shall be high alloy treated steel with eccentric bushing for adjustment of the door.
(5) The horizontal mechanism housing shall be 9mm mild steel plate. Housing covers shall be 3.5 mm thick sheet steel with all openings baffled.
(6) The vertical lock bar housing and cover shall be 4.5 mm thick sheet steel.
(8) The vertical lock bar cover shall be removable only when the horizontal cover has been removed.
(9) The emergency release cabinet shall be located at the point of the door.

b. Functions:
(1) The mechanism shall open or close a 600 mm (24") door in not more than five (5) seconds.
(2) Normal force exerted by a door in travel is approximately 5.5N (1.2 lbs). This force shall be field-adjustable by the use of a clutch.
(3) Device shall hold preset pressure on door at all times of operation regardless of voltage setting.
(4) In the event the door is blocked, the door shall automatically continue to the open or closed position when the obstruction is removed.
(5) The locking device shall be designed so that there will be no projecting lugs on the receiving column, or leading edge of door. Door shall automatically deadlock closed at two points at the rear of the door. Door shall also automatically deadlock in the open position.
(6) In the event of power failure, each door shall have capabilities of being unlocked with a #82-6 series lock and paracentric key from either side of door (or as scheduled). This shall enable the door to be moved to the open or closed position. This lock shall be jamb-mounted, and no projecting lugs shall be permitted on the door.
(7) Red and green indicator lights on the control panel will indicate if the door is closed and locked (green) or in the unsecured position (red).
(8) Paint entire assembly, except track rollers and motor mechanism, with rust-inhibitive primer.

26. Remote Controlled Sliding Door Locking Device (special housing inmate cells)

a. Components and Housing:

(1) All motors shall be 1/20 HP, 115 VAC, minimum as manufactured by a nationally recognized manufacturer. This motor shall be protected by a thermal cutout.
(2) Hanger guides shall be 6 mm thick steel plate and shall interlock with track support with a clearance of not more than 6 mm.

(3) Hanger support rollers shall be trimmed from solid steel 95 mm O.D. grooved 9 mm deep. Rollers shall have anti-friction ball bearings with double grease shields. Roller studs shall be high alloy treated steel with eccentric bushing for adjustment of the door.
(4) The horizontal mechanism housing shall be 9mm mild steel plate. Housing covers shall be 3.5mm thick sheet steel with all openings baffled.
(5) The vertical lock bar housing and cover shall be 4.5 mm thick sheet steel.
(6) The vertical lock bar cover shall be removable only when the horizontal cover has been removed.
(7) Provide bottom-hinged housing cover boxes.

b. Functions:

(1) The mechanism shall open or close a 915mm door in not more than 5 seconds.
(2) Normal force exerted by a door in travel is approximately 5.5N. This force shall be field-adjustable by the use of a clutch.
(3) Device shall hold preset pressure on door at all times of operation regardless of voltage setting.
(4) In the event the door is blocked, the door shall automatically continue to the open or closed position when the obstruction is removed.
(5) The locking device shall be designed so that there will be no projecting lugs on the receiving column, or leading edge of door. Door shall automatically deadlock closed at two points at the rear of the door. Door shall also automatically deadlock in the open position.
(6) Provide emergency release at each door by means of a special tool through a slot in the mechanism housing.
(7) Indicator lights on the control panel will indicate if the door is closed and locked or in the unsecured position.
(8) Paint entire assembly, except track rollers and motor mechanism, with rush-inhibitive primer.

B. Miscellaneous Hardware for Security Doors: The following items are scheduled in the security hardware sets:

1. Finish throughout shall be US32D or US26D as scheduled.

2. Closer LCN #4040:
a. Door closers shall be LCN super-smooth series. They shall have fully hydraulic full rack and pinion action with high-strength cast-iron cylinders. Spring power of each closer shall be adjustable. Closer shall have separate adjustments for latch speed, and latch check. They shall have a back check porting adapter. Valve to set cushioning of opening swing in advance of 90-D for standard mounting.

b. .Closers shall be mounted to the door with through bolts.
c. All closers shall carry a five (5) year warranty.

3. Door stops shall be Temco #W1273CS for wall mount and Temco #1223WS for floor mount with holder, and Temco #1214WS for floor mount without holder, or equal.
   a. Wall mount bumpers shall mount to the wall in line with the door pull or knob.
   b. Silencers shall be Glynn-Johnson #64 or equal.
   c. Thresholds shall be Pemko #170A or equal.
   d. Weatherstripping shall be mounted on both sides of the jamb and header.

BUILDER'S HARDWARE

A. Furnish builder's hardware and accessories for a complete security system to function properly as specified. Furnish templates of hardware if required by other contractors. Provide security fasteners as specified in Section 11196 SECURITY FASTENERS

INSTALLATION OF HARDWARE AND DOOR LOCK CONTROL SYSTEMS

A. Install hardware in accordance with manufacturer's printed instructions and FBOP policy.

END OF SECTION

SECTION 11198 - SECURITY GLAZING

GENERAL

A. Security glazing shall be one of the following:

1. Laminated float glass and polycarbonate sheet with glass on both outer surfaces.

2. Laminated polycarbonate sheet with mar-resistant coating.

3. Sealed insulating unit with laminated float glass and polycarbonate outer lite with glass on outer face and tempered float glass inner lite.

B. Security glazing for Guard Towers:

1. Forced-entry Resistance: Minimum H.P. White (HPW) Level III.

2. Ballistic Resistance: Minimum UL 752 Listed Level 3.

3. Glazing unit shall consist of an outboard lite of 1/4" (6 mm) tempered Solarcool (1) gray laminated to glass-clad polycarbonate or laminated polycarbonate. Reflective surface for guard towers shall be on exterior surface #1 of the Solarcool gray lite.

C. Security glazing for Control Room:

1. Forced-entry Resistance: Minimum H.P. White (HPW) Level III.

2. Ballistic Resistance: Minimum UL 752 Listed Level 3.

D. Glazing at FDC exterior Type A enclosures and SHU units at all levels:

1. Forced-entry Resistance: Minimum H.P. White (HPW) Level II.

2. Maximum glazing opening shall be 125mm (5") wide as required in Section 01000 SECURE CONSTRUCTION REQUIREMENTS MATRIX.

E. Glazing at other Type A Enclosures:

1. Forced-entry Resistance: Minimum H.P. White (HPW) level III or

2. Tempered glass, 6mm (1/4") and steel bars or restricted opening width meeting the requirements stated in Section 01000 SECURE CONSTRUCTION REQUIREMENTS MATRIX

F. Glazing at Type B Enclosures:

1. Forced-entry Resistance: Minimum HPW Level II or

2. Tempered glass, 6mm (1/4") and steel bars meeting the requirements stated in Section 01000 SECURE CONSTRUCTION REQUIREMENTS MATRIX

G. Glazing sealant shall be high-strength silicone.

H. It is desired that the detention equipment subcontractor shall provide a "turnkey" package with a single source of responsibility for the following sections:

1. Security Metal Doors and Frames
2. Detention Hardware
3. Security Glazing
4. Detention Equipment
5. Security Fasteners
6. Security Access Doors

END OF SECTION

GENERAL CONSTRUCTION REQUIREMENTS

As a minimum standard for populations of a low security level the institution General Housing Unit outer walls/roofs/floors shall be a Type A construction as referenced within the following document entitled "Secure Construction Requirements".

SECTION 01000 - SECURE CONSTRUCTION REQUIREMENTS

GENERAL DESIGN REQUIREMENTS

A. RELATED DOCUMENTS

1. Section 01001 - GENERAL CONSTRUCTION REQUIREMENTS.

B. SECURITY ENCLOSURES

1. TYPE A AND TYPE B CLASSIFICATIONS: This section describes the construction materials and assemblies required for secure construction. The Federal Bureau of Prisons utilizes two types of security enclosures, type "A" and type "B." The Secure Construction Requirements Matrix at the end of this section defines the areas where type "A" and type "B" enclosures are required.

2. SUBSTANTIAL CONSTRUCTION: In addition to type A and type B secure construction as described above, FBOP utilizes a Substantial Construction classification for some security wall enclosures. Areas requiring substantial construction are listed in the Secure Construction Requirements Matrix.

C. ACCEPTABLE MATERIALS AND METHODS FOR SECURE CONSTRUCTION: (Reinforcement sizes listed below are to meet minimum requirements for secure construction. Additional reinforcement may be needed to meet structural requirements.)

1. WALLS

a. Type "A" walls shall be constructed using one the of the following methods:

(1) Concrete masonry construction shall be minimum nominal 200 mm (8") units reinforced with No. 13 metric (#4) rebar @ 200 mm (8") o.c. each way with all cells fully grouted with 21 MPa (3000 psi) grout.

(2) Precast concrete for secure wall construction shall be minimum 100 mm (4") thick and have a minimum strength of 35 MPa (5000 psi) reinforced with MW26 (W4) welded wire fabric (minimum), at 100 mm (4") o.c. in both directions, conforming to ASTM A 185.

(3) Cast in place concrete for secure wall construction shall be minimum 150 mm (6") thick and have a minimum strength of 21 MPa (3000 psi) reinforced with No. 13 metric (#4) rebar @ 200 mm (8") o.c. each way or MW65 (W10) welded wire fabric at 100 mm (4") o.c. in both directions. Concrete strength of 28

MPa (4000 psi) shall be reinforced with No. 13 metric (#4) rebar @ 200 mm (8") o.c. each way or MW45 (W7) welded wire fabric at 100 mm (4") o.c. Cast in place concrete which is less than 150mm (6") thick (but no less than 100 mm (4") thick) shall have a minimum strength of 35 MPa (5000 psi) reinforced with MW26 (W4) welded wire fabric (minimum), at 100 mm (4") o.c. in both directions.

(4) Tunnel form construction which meets the minimum concrete strength and reinforcement requirements above will be acceptable.

b. Type "B" walls shall be constructed using one the of the following methods:

(1) Concrete masonry walls shall be constructed as described for type "A" except only vertical reinforcement #13 metric (#4) rebar @ 200 mm (8") o.c. shall be required.

(2) Concrete construction utilizing welded wire fabric as described for type "A" is also acceptable for type "B" construction.

(3) Concrete construction utilizing rebar as described for type "A" above shall have minimum reinforcement of #13 metric (#4) rebar @ 200 mm o.c. in one direction.

c. Substantial Construction shall be constructed as follows:

(1) Substantial Construction shall be a standard construction CMU wall of a minimum nominal thickness of 200 mm (8") or any precast or cast in place concrete. Walls of substantial construction extend to roof structure, or to steel or concrete ceiling structure.

d. Additional requirements for all secure walls:

(1) Security walls must be constructed continuously from a security floor to a secure ceiling. The secure ceiling may be either a secure roof deck or a cap of secure construction built below the roof deck in high bay areas. The continuity of the secure wall construction must be maintained by tying the wall reinforcing into the secure floor and ceiling construction.

e. Special Note on Walls:

(1) In some instances walls/cells may be made of steel. Steel walls/cells are used where existing structures will not support concrete or masonry walls. Written approval must be obtained from the Project Manager to use steel walls/cells.

2. ROOF/CEILING CONSTRUCTION

a. Type "A" roof/ceiling construction shall be constructed of the following:

(1) Cast-In-Place Concrete slab shall be 150 mm (6") thick, 21 MPA (3000 psi) concrete with No. 13 metric (#4) bars at 200 mm (8") o.c. each way or MW65 (W10) welded wire fabric at 100 mm (4") o.c. in both directions. Concrete strength of 27 MPa (4000 psi) shall be reinforced with No. 13 metric (#4) rebar @ 200 mm (8") o.c. each way or MW45 (W7) welded wire fabric at 100 mm (4") o.c. Cast in place concrete which is less than 150mm (6") thick (but no less than 100mm (4") thick) shall have a minimum strength of 35 MPa (5000 psi) reinforced with MW26 (W4) welded wire fabric (minimum), at 100 mm (4") o.c. in both directions.

(2) Composite Metal Deck shall be a minimum 100 mm thick, 21 MPA (3000 psi) concrete, No. 13 metric (#4) bars at 200 mm (8") o.c. each way or MW65 (W10) welded wire fabric at 100 mm (4") o.c. in both directions. Concrete strength of 28 MPa (4000 psi) shall be reinforced with No. 13 metric (#4) rebar @ 200 mm (8") o.c. each way or MW45 (W7) welded wire fabric at 100 mm (4") o.c. in both directions. MW26 (W4) welded wire (minimum), at 100 mm (4") o.c. in both directions, may be used with 35 MPA (5000 psi) concrete.

(3) Prestressed Tees or Hollow Core slabs shall have a concrete topping to give adequate cover for No. 13 metric (#4) bars at 200 mm (8") o.c. or MW65 (W10) welded wire fabric at 100 mm (4") o.c. in both directions.

(4) Solid concrete plank shall have No. 13 metric (#4) bars at 200 mm (8") o.c. each way or MW65 (W10) welded wire fabric at 100 mm (4") o.c. in both directions no concrete topping is required.

b. Type "B" roof/ceiling construction shall be constructed of the following:

(1) Cast-In-Place Concrete slab shall be a minimum of 150 mm (6") thick, 21 MPA (3000 psi) concrete with No. 13 metric (#4) bars at 200 mm (8") o.c. in one direction.

(2) Composite Metal Deck shall be a minimum 100 mm thick, 21 MPA (3000 psi) concrete, No. 13 metric (#4) bars 200 mm (8") o.c. in one direction.

(3) Prestressed Tees or Hollow Core slabs shall have a concrete topping to give adequate cover for No. 13 metric (#4) bars 200 mm (8") o.c. in one direction.

(4) Solid concrete plank shall have No. 13 metric (#4) bars at 200 mm (8") o.c. in one direction. No concrete topping is required
(5) Metal Roof Decks shall be a minimum of 12 ga deck. No additional reinforcing is required, however the deck must be securely tied to the "B" security walls.
(6) Concrete construction utilizing welded wire fabric as described for type "A" is also acceptable for type "B" construction.

3. FLOORS and CRAWL SPACES

a. Floors and crawl spaces construction are required to be the same as roof/ceiling construction. Access to crawl spaces will be through a secure access point. These will usually be mechanical and electrical spaces. The locations shall be submitted for review by FBOP.

D. INTERSECTIONS OF HORIZONTAL AND VERTICAL SURFACES:

1. Continuity of materials is preferred to facilitate a continuous security enclosure. Where dissimilar materials occur, provide sufficient connections to prevent deflection of materials; or continuously weld deck to a continuous steel member anchored to wall or foundation.

2. Security bars must be continuous at all intersections. In other words the bars must go around the corners and continue into adjacent slabs or secure ceiling construction. These requirements must be coordinated with masonry horizontal reinforcing, and dissimilar concrete materials; i.e., masonry and cast in place.

E. PENETRATIONS

1. Security barriers are required on all penetrations in secure walls, floors and ceilings where the opening is larger than 200mm x 200mm (8" x 8") or larger than a 125mm (5") slit. Security barriers are required on all penetrations 125 mm (5") wide which exceed 600mm (24") in length.

2. Security barriers shall be constructed of 22 mm (7/8") diameter round bars. Space between bars shall not exceed 125 mm (5"). Bars longer than 600 mm (24") shall be reinforced with an intermediate flat bar, 60 mm x 10 mm nominal (2 ½" x 3/8"), welded to the barrier frame and tack welded to each bar. The flat stock is installed perpendicular to the bars and at the mid point of the bars to prevent spreading.

3. Security barriers for mechanical penetrations are detailed in Division 15.

4. In some designs, due to the requirement to put security barriers on large exterior wall louvers, it may be more economical to put mechanical rooms outside the security envelope.

MATRIX OF OPENINGS WITH SECURITY BARRIER REQUIREMENTS

inches		4"	5"	6"	8"	>8"	10"	12"	24"	>24"
	mm	100	125	150	200	>200	250	300	600	>600
4"	100	-	-	-	-	-	-	-	-	-
5"	125	-	-	-	-	-	-	-	-	BAR
>5"	>150	-	-	-	-	BAR	BAR	BAR	BAR	BAR
8"	200	-	-	-	-	BAR	BAR	BAR	BAR	BAR
>8"	>200	-	-	BAR	BAR	BAR	BAR	BAR	BAR	BAR

F. SECURE CONSTRUCTION REQUIREMENTS MATRIX

1. General note regarding FDCs - any space listed below that is designated as a "B" security shall be constructed with "A" walls where one or more walls are part of the outside perimeter walls.

2. Shaded boxes indicate that the program space does not exist at the listed security level.

3. Security Matrix Abbreviations:

   a. FCI = Federal Correctional Institution
   b. FDC = Federal Detention Center
   c. FPC = Federal Prison Camp
   d. USP = United Stated Penitentiary
   e. NR = Secure construction not required.
   f. SUB = Substantial construction

Program Space	Low Security	Medium Security	High Security	FDC	Notes
GENERAL REQUIREMENTS - Requirements for typical conditions or applicable to multiple spaces or areas. More stringent requirements for specific rooms or conditions will override these general requirements					
ELECTRICAL AND ELECTRONIC EQUIPMENT ROOMS					
Electronic equipment rooms	B	B	B	B	
Electrical rooms in FCIs and USPs					
Electrical rooms at buildings outside secure compound	NR	NR	NR		
Electrical rooms at Buildings inside secure compound	SUB[1]	SUB[1]	SUB[1]		(1) CMU (200mm or 8"minimum) or concrete - extend to roof structure, or to steel, or to concrete ceiling structure

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Electrical rooms in FDC's					
Electrical rooms in secure portions of FDCs				SUB[1]	(1) CMU (200mm or 8"minimum) or concrete - extend to roof structure or to steel, or to concrete ceiling structure
Electrical rooms in non-secure portions of FDCs				NR	
OTHER EQUIPMENT ROOMS					
Elevator equipment rooms	B[1]	B	B	B	(1) Elevators are not normally provided in low security FCIs. (2) located in Central Utility Plant - outside secure perimeter (3) located on top floor or penthouse - inside secure perimeter
Radio equipment rooms	B[2]	B[2]	B[2]	B[3]	
EXTERIOR WALLS for FDCs					
Exterior walls at secure portions of FDCs				A	Window openings in these walls to be no more than 125mm (5") wide
Exterior walls at non secure portions of FDCs				NR	
EXTERIOR WALLS for FCIs and USPs					
Exterior walls at General Inmate Housing Units	B[1]	B[1]	A[1]		(1) Windows in these walls to have security bars or structural steel tubing located on the interior side of the window. (2) Window openings in these walls to be no more than 125mm (5") wide (3) Windows in these walls to have security bars or structural steel tubing located on the exterior side of the window.
" Special Housing Units	B[1]	B[1]	A[2]		
" Security Corridors at USPs			B[3]		
Exterior walls at " Guard Towers outside compound			B		
" Guard Towers inside compound			A		
" other buildings inside the secure compound	NR	NR[3]	B[3]		
" other buildings outside the secure compound	NR	NR	NR		
FLOOR CONSTRUCTION					
Floor Construction Separating Enclosed Building Space from Exterior or Grade at FDCs (includes floors separating building space from "crawl" space or access space formed by structural floors)					
Floor construction at Secure portions of FDCs				A	
" Non-secure portions of FDCs				NR	
Floor Const. Separating Enclosed Building Space From Exterior or Grade at FCIs and USPs (includes floors separating building space from "crawl" space or access space formed by structural floors)					
Floor construction at - General inmate housing units	B	B	A		
" Special housing units	B	B	A		
" Security corridor in USPs			B		
" Guard towers at USPs			B		
" Other buildings inside secure compound	NR	NR	B		
" Other buildings outside secure compound	NR	NR	NR		
Floor Construction Separating Inmate Housing Units					
Floor construction separating general housing units - From each other	NR	NR	B	B	

Program Space	Low Security	Medium Security	High Security	FDC	Notes
" From other spaces			A	A	
Floor construction separating special housing units from other units or spaces			A	A	
INTERIOR WALLS					
Interior walls enclosing stairwells at - General inmate housing areas	NR	NR	A	A	
" Special housing units	B	B	B	B	
" Other buildings	NR	NR	B	B	
Interior walls separating secure portions of FDCs from non-secure portions				A[1]	(1) Windows in these walls to have security bars or structural steel tubing located on the interior side of the window
Interior walls separating security corridor in USP's from other spaces			SUB[1]		(1) CMU (200mm or 8"minimum) or concrete, extend to roof structure or steel, or to concrete ceiling structure. Windows in these walls to have security bars or structural steel tubing located on the corridor side of the window
Interior walls separating security corridor in USP's from housing units			A		
ROOF CONSTRUCTION					
Roof Construction For FDCs					
Roof construction at Secure portions of FDCs				A	
" Non-secure portions of FDCs				NR	
Roof Construction for FCIs and USPs					
Roof construction at General inmate housing units	B	B	A		
" Special housing units	B	B	A		
" Security Corridor at USPs			B		
Roof construction at Guard towers for USPs			B		
" Other buildings inside Secure Compound	NR	NR	B		
" Other buildings outside Secure Compound	NR	NR	NR		
REQUIREMENTS FOR SPECIFIC AREAS AND SPACES					
ADMINISTRATIVE AND SUPPORT - OUTSIDE SECURE PERIMETER					
Pedestrian sallyport to inside secure perimeter				A	
Pedestrian sallyport to secure compound	A	A	A		
Visitor sallyport to visiting rm				A	
Central Control Spaces					
Control center	A	A	A	A	
Control center sallyport	A	A	A	A	
Electronic equip. room (comm spec work area)	A	A	A	A	

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Central Utility Plant					
Class B tool Room	B	B	B	B	
Computer Services					
SENTRY LAN room	B	B	B	B	
Correctional Services					
Armory	A	A	A	A	
Locksmith shop	A	A	A	A	
Emergency squad room	A	A	A	A	
Emergency equip storage	A	A	A	A	
SIS offices	B	B	B	B	
SIS storage room	B	B	B	B	
Telephone monitoring equipment	B	B	B	B	
Telephone monitoring/listening	B	B	B	B	
Financial Management					
Cashier's office	B	B	B	B	
Garage/Landscaping					
B Tool room	B	B	B		
Warehouse Facilities					
Secure hot storage	A	A	A	A	
Commissary secure storage	B	B	B	B	
Safety and sanitation secure storage	B	B	B	B	
INSIDE SECURE PERIMETER					
Access area for vehicles and services					
Tool room		B	B	B	
Vehicular sallyport - service				A	
Veh sallyport - trash removal				A	
Veh sallyport - US Marshals				A	
Commissary Suite					
Perimeter of suite	B	B	B	B	Excluding sales lobby
AIM room	B	B	B		
Sales area with booths	B	B	B	B	
Sales lobby	NR	NR	NR		
Secure "hot" storage	B	B	B	B	
Storage & work area	B	B	B	B	
Correctional Services					
Inmate holding cell			B	B	
Enclosed security corridor at USPs - see general requirements					
Food Service					
Secure storage	B	B	B	B	
Chemical Storage	B	B	B	B	
Meat Prep	NR	NR	NR	NR	Secure ceiling required
Vegetable Prep	NR	NR	NR	NR	Secure ceiling required

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Health Service					
Dental storage	B	B	B	B	
Medical Records	B	B	B	B	
Records Office	B	B	B	B	
Pharmacy	B	B	B	B	
Pharmacy Storage	B	B	B	B	
Observation suite perimeter	B	B	A	A	
Isolation vestibule	B	B	B	B	
Observation/isolation rooms	B	B	B	A	
Industrial Programming for Inmates UNICOR - Federal Prison Industries (FPI)					
A Tool room	A	A	A	A	
B Tool room	B	B	B	B	
Inmate Housing					
General Housing					
Cell floor - at mezzanine		NR	B	NR	
Counselor's Room	NR	B	B	B	
Inmate cell side walls		SUB[1]	B	SUB[1]	(1) CMU (200mm or 8" minimum) or concrete, extend to roof structure or steel, or to concrete ceiling structure (2) Same as note (1) above plus grout fill if CMU.
Inmate cell front walls		SUB[2]	B	SUB[2]	
Inmate cell side wall at end of run		NR	B	B	
Outside recreational spaces				A	
Sallyport entrance into unit			A		
Unit files	B	B	B	B	
Unit management suite perimeter	NR[3]	B	B[4]	B[4]	(3) Reminder - exterior portion of perimeter wall to be "B" construction (4) Reminder - exterior portion of wall to be "A" construction
Unit management suite secure refuge room	NR[3]	B	B[4]	B[4]	
Unit secretary	B	B	B	B	
Special Housing					
Hearing room	B	B	B	B	
Inmate cells	B	B	B	B	Cell front and side walls
Interview room	B	B	B	B	
Law library	B	B	B	B	
Medical exam room	B	B	B	B	
Multi purpose rec rooms	B	B	B	B	
Outdoor recreation	B	B	A	A	
Personal property storage	B	B	B	B	
Inmate Systems Management					
Inmate records					
Data room	B	B	B	B	
Inactive file room	B	B	B	B	
Records office	B	B	B	B	
Mail room	B	B	B	B	Secure mailboxes with roll up door

Program Space	Low Security	Medium Security	High Security	FDC	Notes
Receiving and Discharge					
Holding cells	B	B	B	B	
Personal property storage	B	B	B	B	
R&D suite perimeter	NR	NR	B	B	
Sallyport from Marshals				A	
Laundry Service					
Laundry storage	B	B	B	B	
Maintenance Shops (Facilities)					
A Tool room	A	A	A	A	
B Tool room	B	B	B	B	
Electronics shop	B	B	B	B	
Safety and Sanitation					
Secure hot storage	B	B	B	B	
Visiting Rooms					
Strip search	B	B	B	B	
Vending storage	B	B	B	B	
Visiting room	NR	NR	B	B	
Vocational Training					
B Tool room	B	B			

SECURE CONSTRUCTION REQUIREMENTS FOR FEDERAL PRISON CAMPS

Program Space	FPC		Notes
	WORK CAMP	Mens/Womens CAMP	
ADMINISTRATIVE AND SUPPORT			
Central Control Spaces			
Electronic equip. room	B	B	
Computer Services			
SENTRY LAN room	B	B	
Commissary Suite			
Perimeter of suite	B	B	excluding sales lobby
AIM room		B	
Sales area with booths	B	B	
Sales lobby		NR	
Secure "hot" storage		B	
Storage & work area	B	B	
Food Service			
Secure storage	B	B	
Chemical Storage	B	B	
Health Service			
Medical Records		B	

Program Space	FPC		Notes
	WORK CAMP	Mens/Womens CAMP	
Dispensing room	B	B	
Observation suite perimeter		B	
Isolation vestibule		B	
Observation/isolation rooms		B	
Inmate Housing			
General Housing			
Unit files		B	
Unit Secretary		B	
Inmate Systems Management			
Inmate Records			
Data room		B	
Inactive file room		B	
Mail room		B	
Records office		B	
Receiving and Discharge			
Holding cells		B	
Personal property storage		B	
R&D suite perimeter		NR	
Laundry Services			
Laundry storage		B	
Visiting Rooms			
Inmate strip search	B	B	
Vocational Training			
B Tool room		B*	*women's camp only

END OF SECTION

SECURITY FENCE AND BARBED WIRE REQUIREMENTS

As a minimum standard for populations of a low security level and above, the contractor shall construct the institution security fence in accordance with the attached requirements.

SECTION 02820 - SECURITY FENCES AND GATES

PERIMETER SECURITY FENCE

A. The perimeter fence provided for this Project shall enclose the secure area.

B. FABRIC: Polyvinyl chloride (PVC) coated and aluminum chain link fences and gates are not acceptable on FBOP projects. Use only aluminum coated steel wire fabric or steel wire fabric galvanized prior to weaving.

C. END, CORNER AND PULL POSTS:

1. Up to 4.8 m (16'), 102 mm (4") O.D. ,Sch 40
2. Over 4.8 m (16') to 5.5 m (18'), 168 mm (6.625") O.D., Sch 40
3. Over 5.5 m (18') to 6m (20'), 219 mm (8.625") O.D., Sch 40
4. Over 6 m (20'), 219 mm (8.625") O.D.,extra strong pipe, Sch 80

D. LINE (INTERMEDIATE) POSTS:

1. Up to 4.8 m (16'), 73 mm (2.875") O.D., Sch 40
2. Over 4.8 m (16') to 6 m (20'), 102 mm (4") O.D., Sch 40
3. Over 6 m (20'), 168 mm (6.625") O.D., Sch 40

E. TOP, BOTTOM AND INTERMEDIATE RAILS AND BRACES: 42 mm (1.66") diameter.

F. GATE POSTS: For nominal gate width as follows:

1. Up to 1.8 m (6'), 89 mm (3.5") O.D. Sch 40 pipe, but not less than line post size
2. Over 1.8 m (6') to 3.7 m (12'), 168 mm (6.625") O.D. Sch 40 pipe.
3. Over 3.7 m (12') to 5.5 m (18'), 219 mm (8.625") O.D. Sch 40, but not less than end post size.
4. Over 5.5 m (18'), 219 mm (8.625") O.D., extra strong pipe, Sch 80.

G. HINGES: Minimum 4 hinges per leaf.

H. TENSION WIRE: 4.5 mm (0.177") diameter metallic-coated steel.

I. Security fences shall be located 6100 mm (20') apart. Maintain a minimum 30.5 m (100') clear zone between the interior perimeter fence and any building. Taut wire fence shall be located at 1525 mm (5') parallel to the interior perimeter fence, toward the compound side. Taut wire fence shall be used for high security only. Taut wire fence layout at the administration building shall refer to Detail 3 of Drawing SS 5.05, Division 17 Model Documents.

J. TAUT WIRE FENCE POST: 100mm (4") O.D. pipe Sch 40

K. Interior fence angles must be a minimum of 120 degrees except at vehicular sallyport.

L. Related work specified elsewhere:

1. Division 2 Sitework.

2. Section 11197 - DETENTION HARDWARE, for hardware.

INTERNAL FENCE (CONTROL FENCE)

A. Internal fences are constructed between housing units and between housing units and adjacent core buildings. These fences are used to isolate the inner compound and restrict inmate movement.

B. If an older specification is being used that references ASTM A 120, change the reference for chain link fence pipe to the new designation ASTM A 53.

C. FABRIC: Polyvinyl chloride (PVC) coated and aluminum chain link fences and gates are not acceptable on FBOP projects. Use only aluminum coated steel wire fabric or steel wire fabric galvanized prior to weaving.

D. HEIGHT: 3660 mm (12').

E. END AND CORNER POSTS: Manufacturer's standard 100 mm (4" diameter).

F. LINE (INTERMEDIATE) POSTS: Manufacturer's standard 73mm (2.875") in diameter.

G. TOP RAILS, INTERMEDIATE RAILS, BOTTOM RAILS AND BRACES: Manufacturer's standard 42 mm (1.66") diameter.

H. GATE POSTS: For nominal gate width as follows:

1. Up to 1.8 m (6'), minimum 70 mm (2.875") outside diameter pipe; and

2. Over 1.8 m (6'), minimum 100 mm (4") outside diameter pipe.

I. TENSION WIRE: 4.5 mm (0.177") diameter metallic-coated steel.

J. HINGES: Minimum 4 hinges per leave.

REFERENCES

A. ASTM A53 — Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc-Coated Welded and Seamless (Replaces A 120).

B. ASTM A90 — Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.

C. ASTM A153 — Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.

D. ASTM A392 — Specification for Zinc-Coated Steel Chain-Link Fence Fabric.

E. ASTM A428 — Standard Specification for Steel, Sheet, for Porcelain Enameling

F. ASTM A446 — Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.

G. ASTM A491 — Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.

H. ASTM A569 — Steel, Sheet, and Strip, Carbon (0.15 maximum percent), Hot-Rolled, Commercial Quality.

I. ASTM A653 — Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

J. ASTM A824 — Specification for Metallic-Coated Steel Marcelled Tension Wire for Use with Chain Link Fence.

K. ASTM B117 — Practice for Operating Salt Spray (Fog) Apparatus.

L. ASTM F567 — Standard Practice for Installation of Chain-Link Fence..

M. ASTM F626 — Specification for Fence Fittings.

N. ASTM F900 — Standard specification for Industrial and Commercial Swing Gates.

O. ASTM F1043 — Specification for Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework.

P. ASTM F1083 — Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

Q. ASTM F1916 — Standard Specifications for Selecting Chain-Link Barrier Systems with Coated Chain-Link Fence Fabric and Round Posts for Detention Applications.

R. Chain Link Fence Manufacturers Institute (CLFMI) — Product Manual.

S. Federal Specification RR-F-191 — Fencing, Wiring, and Post Metal (and Gates, Chain Link Fence Fabric and Accessories).

T. ANSI/ASTM F567 — Practice for Installation of Chain-Link Fence.

U. Standards of Manufacture: Comply with Chain Link Fence Manufacturers Institute (CLFMI) Standards for "Galvanized Chain Link Fence Fabric," and as herein specified, except when aluminized chain link fabric is used.

V. Provide 10-year manufacturer's warranty that the materials supplied shall be free from defects.

PRODUCTS

A. STEEL FABRIC

1. For Perimeter Security Fence

a. No. 9 gauge steel wires, 50 mm (2") mesh, with top selvage twisted and barbed and bottom selvage twisted and barbed meeting or exceeding the requirements of FGD RR-F-00191/1.
b. Fabric can not exceed 50 mm (2") deflection under 130N (30 lb) load.

2. For Internal Fence:

a. Selvage twisted and barbed at top and knuckled at bottom.

3. Provide one-piece fabric widths for fencing or partitions up to 4900 mm (16') high.

B. FINISH FOR FABRIC, FRAMEWORK, AND APPURTENANCES

1. Galvanized finish with not less than minimum weight of zinc per square meter complying with the following:

a. Fabric: ASTM A392 Class 2, 610 g/m^2 (2 oz/ft^2) zinc, coated before weaving.
b. Pipe: ASTM A53 and ASTM F1083, 610 g/m^2 (2 oz/ft^2) zinc.

c. Hardware and Accessories: Galvanizing per ASTM A153 (zinc weight per Table I).
d. Wire: ASTM A392, Class 2, 610 g/m^2 (2 oz/ft^2) zinc.

2. Aluminum coating finish conforming to requirements of ASTM A491. The aluminum coating shall be a minimum of 122 g/m^2 (0.40 oz/ft^2) of wire surface. The weight of the coating shall be determined by the strip test as defined in ASTM A428. Fabric shall have a 25-year written warranty against failure due to rust or corrosion. Top and bottom selvages shall be coated with a protective coating to retard formation of rust at cut ends.

C. FRAMEWORK

1. Posts, rails, and braces shall conform to Federal Specification RR-F-191/3C Class 1, Grade A or Grade B, and shall meet the following performance criteria when subjected to salt spray testing in accordance with ASTM B117:

a. Exterior — 1,000 hours with maximum 5% red rust.
b. Interior — 650 hours with maximum 5% red rust.

2. Steel pipe, Grade A, round, shall be produced to conform with ASTM F1083, standard weight pipe (Schedule 40), or extra strong pipe (Schedule 80) as specified, with a minimum yield strength of 170 MPA (25,000 psi). Steel pipe, Grade B, round, shall be manufactured from steel conforming to ASTM A653, or ASTM 569, cold-formed, high-frequency-welded, and have a minimum yield strength of 350 MPA (50,000 psi).

3. Framework Coating: Grade A pipe surface area shall be coated with 550 g/m^2 (1.8 oz/ft^2) of zinc in accordance with ASTM F1083. Grade B pipe exterior surface shall be triple-coated with 300 ±4.5 g/m^2 (1 ±0.15oz/ft^2) of zinc, 5 ±2.5 micrograms/cm^2 (30 ±15 micrograms/in^2) of chromate per square centimeter, and 0.5 ±0.2 mil of clear cross-linked polymer. The interior surface shall have the same zinc and chromate coating as the exterior and shall have a zinc-rich-based organic coating having a minimum zinc powder loading of 91% by weight and be capable of providing galvanic protection.

4. Framework Size: The product of the yield strength and the section modulus of Grade B pipe shall not be less than that of Grade A pipe. Posts shall be of the following dimensions and weights:

POST OR RAIL TYPE	OD	Weight Grade A	Weight (kg/m) Grade B
Top, bottom, and intermediate rails, braces	42.2 mm (1.660")	3.4 kg/m (2.27 lb/ft)	2.7 kg/m (1.84 lb/ft)
Line posts			
up to 4.8 m (16')	73 mm (2.875")	8.6 kg/m (5.79 lb/ft)	6.9kg/m (4.64lb/ft)
over 4.8 m (16') to 6 m (20')	101.6 mm (4.0")	13.6 kg/m (9.11 lb/ft)	9.8 kg/m (6.56 lb/ft)
over 6 m (20')	168 mm (6.625")	28.3 kg/m (18.97 lb/ft)	N/A
End, corner, and pull posts			
up to 4.8 m (16')	101.6mm (4.0")	13.6 kg/m (9.11 lb/ft)	9.8 kg/m (6.56 lb/ft)
over 4.8 m (16') to 5.5 m (18')	168 mm (6.625")	28.3 kg/m (18.97 lb/ft)	N/A
over 5.5 m (18') to 6 m (20')	219 mm (8.625")	42.5 kg/m (28.55 lb/ft)	N/A
over 6 m (20')	219 mm (8.625")	64.63 kg/m (43.39 lb/ft)	N/A
Taut wire fence post			
	101.6mm (4.0")	13.6 kg/m (9.11 lb/ft)	9.8 kg/m (6.56 lb/ft)

D. CHAIN LINK GATES

1. Fabrication: Gate panel shall be manufactured with galvanized steel pipe meeting the requirements in specification section C. Gate frame shall be welded to form a rigid panel. Special fittings and rivets will not be approved. Provide vertical and horizontal members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members a maximum of 2.5 m (8') apart unless otherwise indicated.

   a. Provide same fabric as for fence, unless otherwise indicated. Install fabric with stretcher bars at vertical, top and bottom edges. Attach stretcher bar bands at a minimum of 380 mm (15") on center to secure stretcher bars. Tack weld all nuts and bolts.

   b. Pedestrian Swing Gates: Fabricate perimeter frames in accordance with ASTM F900. Minimum size of perimeter frames members shall be 76 mm (3") OD pipe.

(1) Gate Posts: Furnish posts for supporting one leaf of a single- or double-gate installation.

(2) Hinges: Size and material to suit gate size, non-lift-off ball-and-socket type, offset to permit maximum degree of gate opening. Provide sufficient hinges for each leaf to support gate without excessive sagging, minimum of two pairs of hinges per leaf.

(3) Mounting for Electric Lock: Provide swing gates with mounting for electric gate lock.

(4) Provide gates with mounting for operators and remote electric operation. Operators are specified in 11197 - DETENTION HARDWARE.

c. Vehicular Gates: Fabricate perimeter frames of minimum 76 mm (3") OD pipe.

(1) Install fabric with stretcher bars at vertical edges and tie at top and bottom edges. Attach stretcher bars to gate frame at 380 mm (15") o.c. minimum.

(2) Attach hardware with rivets or other means, providing security against removal or breakage.

(3) Gate Frame: As standard with the manufacturer for overhead gate operation and sizes indicated, including (but not limited to) supporting structure, trolley hangers, bottom tracks, guides, support columns, and miscellaneous steel shapes.

(4) Provide gates with mounting for chain drive vehicular gate operators and remote electric operation. Vehicle gate operators are specified in 11197 - DETENTION HARDWARE.

(5) Vehicle Access:

(a) For perimeter security fence:
4.3 m (14') clear width x 4.3 m (14') clear height.

(b) For internal fence, sliding gate at loading docks:
10 m (32.8') clear width x full fence height.

© For internal fence, vehicular swinging gate double leaf between housing units:
4.88 m (16') clear width x full fence height

E. MISCELLANEOUS MATERIALS

1. Tie wires shall be produced from a 9-gauge steel core wire with either a galvanized coating (610 g zinc coating per square meter) or aluminum coating (122 g aluminum per square meter). Aluminum wire shall not be used. Coating of tie shall be the same type as fence fabric.

2. Concrete: 21 MPA (3000 psi) as specified in 03050 - BASIC CONCRETE MATERIALS AND METHODS, unless otherwise noted.

3. Galvanizing Touch-Up Paint: Where galvanizing is damaged by welding or other means, touch up paint with "Galv-Weld" by Galv-Weld Products, or approved equal.

4. Provide all other materials not specifically described but required for a complete and proper installation of the work of this section. Materials shall be new, first-quality of their respective kinds.

5. Tension and Brace Bands: All bands shall be beveled 12-gauge galvanized steel. Galvanized coating shall meet specification section B. and C. above.

EXECUTION

A. FABRICATION

1. Coordination fabrication to receive security locking and operating devices in accordance with manufacturer's written instructions.

2. Fabricate material and components in the shop, to the greatest extent possible. Galvanize components after fabrication.

3. Provide welded corners at gate panels and other frame assemblies.

B. INSPECTION

1. Surface Conditions: Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

C. SITE PREPARATION

1. Stake out fence lines and terminal post locations.

2. Underground utilities shall be installed prior to starting construction.

3. All clearing and grading for the fence lines shall be performed before installation begins.

D. INSTALLATION

1. General: Install work of this section in accordance with the manufacturer's recommendations as approved by the Contracting Officer and in accordance with ANSI/ASTM F567.

2. The fence shall follow line of finished grade, unless otherwise indicated.

3. Post Locations: Double fence rows to be set 6100 mm (20') apart. Line posts will be spaced equal distances and at intervals not exceeding 3050 mm (10'). Terminal posts will be set at the beginning and end of each continuous length of fence, with a maximum spacing of 150 m (500') and at abrupt changes in vertical or horizontal alignment. Extend posts 1200 mm (4') / 2000 mm (6'-6") above fabric at vehicular sallyport for supporting barbed tape. Taut wire posts will be also spaced equal distances and at intervals not exceeding 3050 mm (10').

4. Post Footings: Dig or drill post hole footings in the line of fence and taut wire fence. Set posts in vertical position and in line. Pour footings with 21 MPA (3000 psi) minimum strength concrete. Size of footings shall conform to the sizes shown. Concrete shall be thoroughly worked into the footing so as to leave no voids and will be allowed to cure a minimum of 7 days before installing fence fabric or other components.

   a. When solid rock is encountered, set posts in the solid rock. The depth of the hole shall be three times the diameter of the post. The diameter of the hole shall be 13 mm (½") greater than the diameter of the post. Half-fill the void with non-shrink grout and force the post to the bottom of the hole and plumb. Work additional grout into hole so as to leave no voids. Crown the grout to shed water.

   b. When solid rock is covered by soil or loose rock, set the posts to the full depth unless the penetration into solid rock reaches the minimum depth specified above, in which case terminate the depth of penetration. Construct footing from solid rock to 50 mm (2") below finished grade. Grout the portion of post in solid rock.

   c. After installation, all fence posts shall pass the following tension test: Apply a force of 222 N (50 lbs) perpendicular to the direction of the fence at the top of each post. The post should not deflect more than 25 mm (1") at the location where the force is applied.

5. Terminal Post Bracing: Fences shall have braces at all terminals. Brace corner, end, and pull posts to adjacent line post with horizontal center rail and diagonal truss rods.

6. Top and Bottom Rails: Run top rails continuously through line post caps. Support the top and bottom rails at each post so that a continuous brace from end to end of each stretch of fence is formed. Securely fasten the top and bottom rails to the terminal posts and splice with sleeves or expansion couplings.

7. Intermediate Rails: Install intermediate rails midway between the top of the fence fabric and bottom rails. Connect intermediate rail to terminal and line posts with 40 mm (1-5/8") boulevard bands. Attachment bolts for bands shall be carriage bolts with nuts (end of bolts shall be peened). Fence fabric shall be secured to intermediate and bottom rail with galvanized steel wire woven through fence fabric, completely around the rails, and the wire will be twisted three twists on the rail side of fence and the tails of the wire cut off to preclude untwisting by hand. Provide intermediate rail at the top of fabric at the vehicular sallyport.

8. Fabric: Leave approximately 25 mm (1") between concrete slab or finish grade and bottom selvage and 50 mm (2") between top selvage and overhead structure. Install fabric on security side or institution side of fence, and anchor to framework so that fabric remains in tension after pulling force is released. Stretch fabric to the point where maximum deflection at the center of the panel does not exceed 50 mm (2") under 133 N (30 lbs). Maintain tension by securing stretcher bars to posts with metal bands spaced 380 mm (15") o.c. maximum. Fasten fabric to framework with wire ties, spaced 300 mm (12") o.c. maximum for all posts, rails, braces, and tension wires. Tighten all fasteners securely, eliminating fabric movement across framework.

9. Stretcher Bars: Thread through or clamp to fabric 100 mm (4") o.c., and secure to posts with metal bands spaced not over 380 mm (15") o.c.

10. Gates: Install gates plumb, level, and secure for full opening without interference. Adjust hardware for smooth operation and lubricate.

11. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Spot-weld nuts to bolts in position to prevent removal. Touch up damaged galvanized finish as required.

12. Post and Line Caps: Provide weather tight closure cap for each post.

13. Grounding: Fence fabric shall be grounded at a maximum of 30 m (100') intervals by attaching both fence fabrics at ground level to a 16 mm (5/8") diameter, 3 m (10') long copper-clad grounding rod. Drive the rod into the ground between fences leaving 150 mm (6") above grade. Connect the rod above ground to a #8 copper wire running to each fence. At each fence, run the #8 wire up the fabric 450 mm (18") and connect the #8 wire to the fabric with a straight copper cadweld connection. Install at all perimeter security and control fences and other areas determined by FBOP where necessary for lighting protection.

14. The following standard drawings and/or details are provided as examples of how the requirements for this section can be met. These or other drawings approved by FBOP shall be included in the contract documents for the project.

SCHEDULE OF DRAWINGS

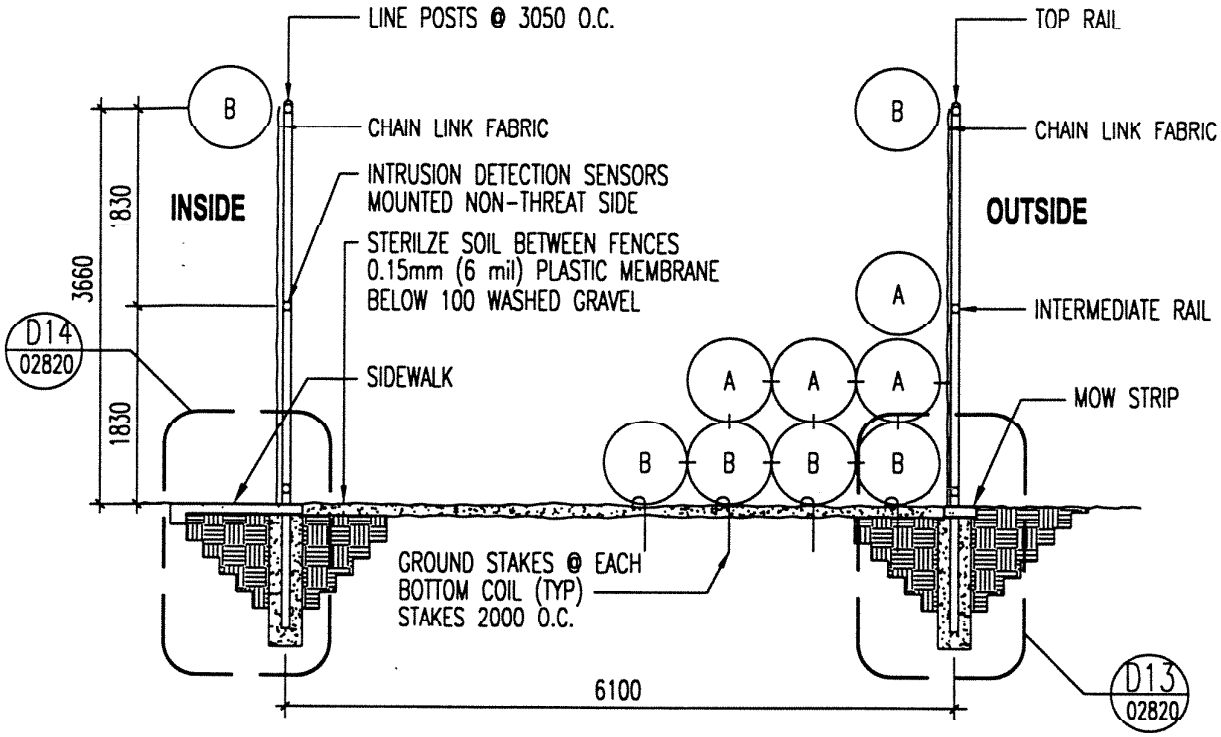
02820-D1	TYPICAL SECTION LOW & MEDIUM SECURITY PERIMETER FENCE
02820-D2	TYPICAL SECTION HIGH SECURITY PERIMETER FENCE
02820-D3	CORNER PULL OR END POST
02820-D4	VEHICULAR SALLYPORT PLAN - LOW & MEDIUM SECURITY
02820-D5	VEHICULAR SALLYPORT PLAN - HIGH SECURITY
02820-D6	SLIDING VEHICLE GATE
02820-D7/D7A	TYPICAL FENCE SECTION @ VEHICULAR SALLYPORT - LOW & MEDIUM SECURITY
02820-D8	FENCE SECTION @ VEHICULAR SALLYPORT - HIGH SECURITY
02820-D8A	FENCE SECTION @ VEHICULAR SALLYPORT - HIGH SECURITY
02820-D9	ANTI-CRASH GATE PLAN
02820-D10	ANTI-CRASH GATE DETAIL SECTION
02820-D11	LOCK PIN DETAIL
02820-D12	GATE ARM MOUNTING DETAIL
02820-D13	TYPICAL EXTERIOR FOUNDATION PERIMETER SECURITY FENCE
02820-D14/D14A/D14B	TYPICAL INTERIOR FOUNDATION PERIMETER SECURITY FENCE
02820-D15	TYPICAL TAUT WIRE FENCE FOUNDATION DETAIL
02820-D16	TYPICAL FENCE SECTION @ VEHICULAR SALLYPORT - LOW & MEDIUM SECURITY
02820-D17	FENCE SECTION @ VEHICULAR SALLYPORT - HIGH SECURITY

02820-D18	TYPICAL FENCE SECTION @ VEHICULAR SALLYPORT - LOW & MEDIUM SECURITY
02820-D19	FENCE SECTION @ VEHICULAR SALLYPORT - HIGH SECURITY
02820-D20	BARBED TAPE WIRE DETAIL
02820-D21	TYPICAL ELEVATION @ CONTROL FENCE - LOW & MEDIUM SECURITY
02820-D22	TYPICAL SECTION @ CONTROL FENCE - LOW & MEDIUM SECURITY
02820-D23	TYPICAL SECTION @ CONTROL FENCE - HIGH SECURITY

END OF SECTION

SECURITY COILS

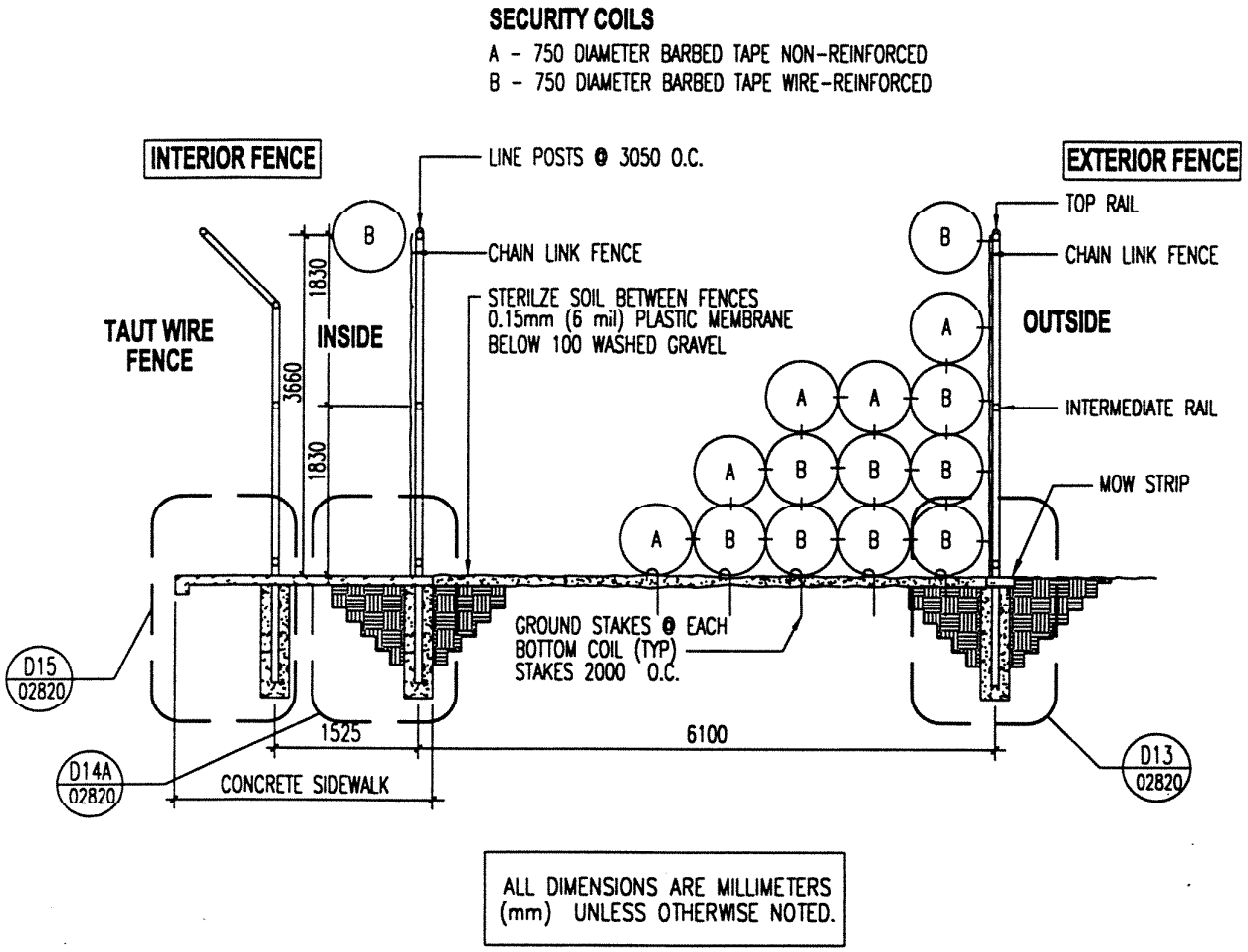
A - 750 DIAMETER BARBED TAPE NON-REINFORCED
B - 750 DIAMETER BARBED TAPE WIRE-REINFORCED



ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

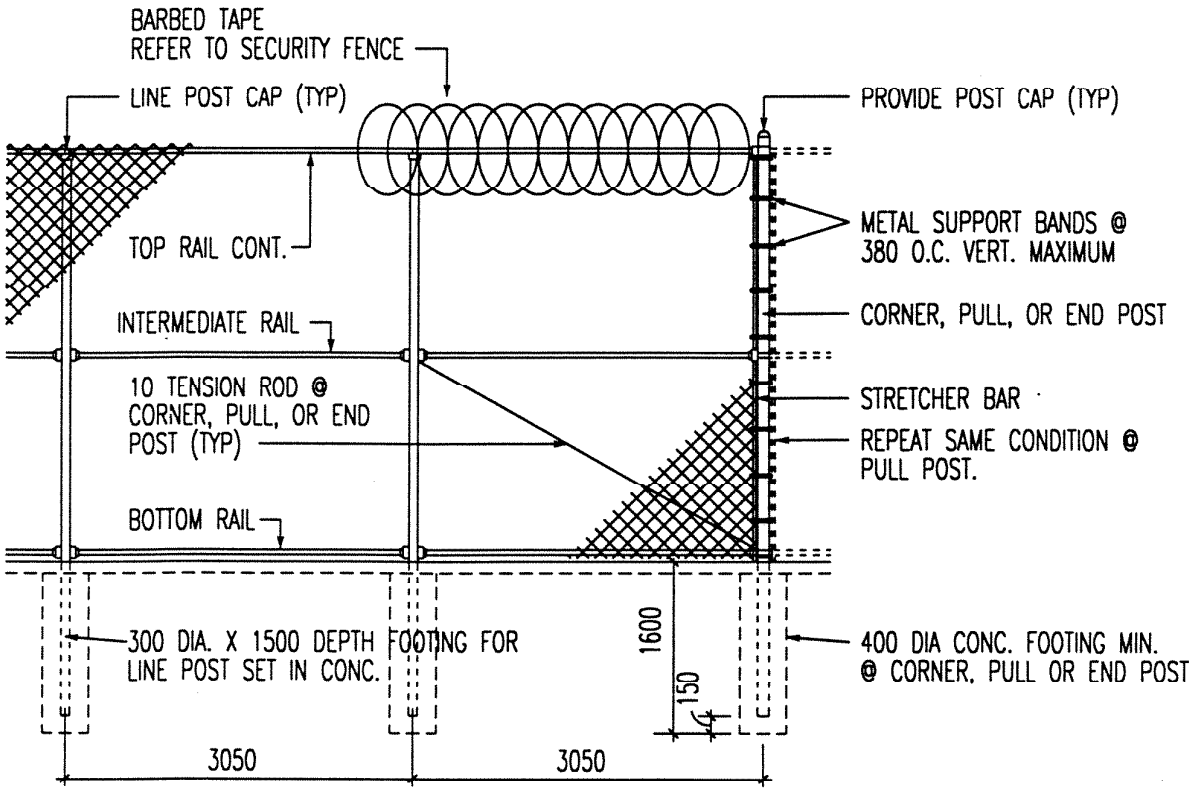
PERIMETER SECURITY FENCE
LOW & MEDIUM SECURITY - TYPICAL SECTION

N.T.S.



TYPICAL SECTION HIGH SECURITY PERIMETER FENCE

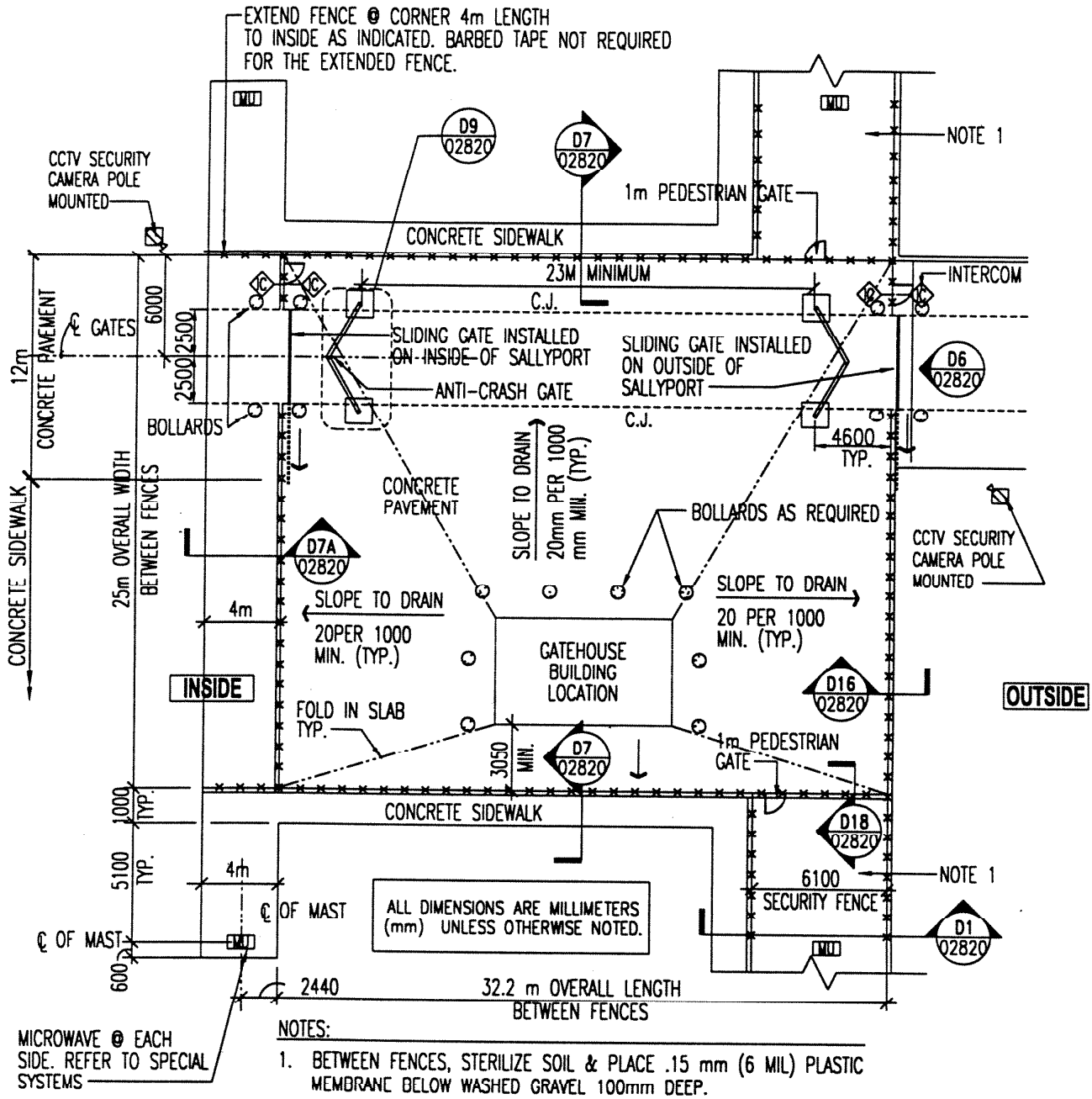
N.T.S.



ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

CORNER PULL OR END POST

N.T.S.

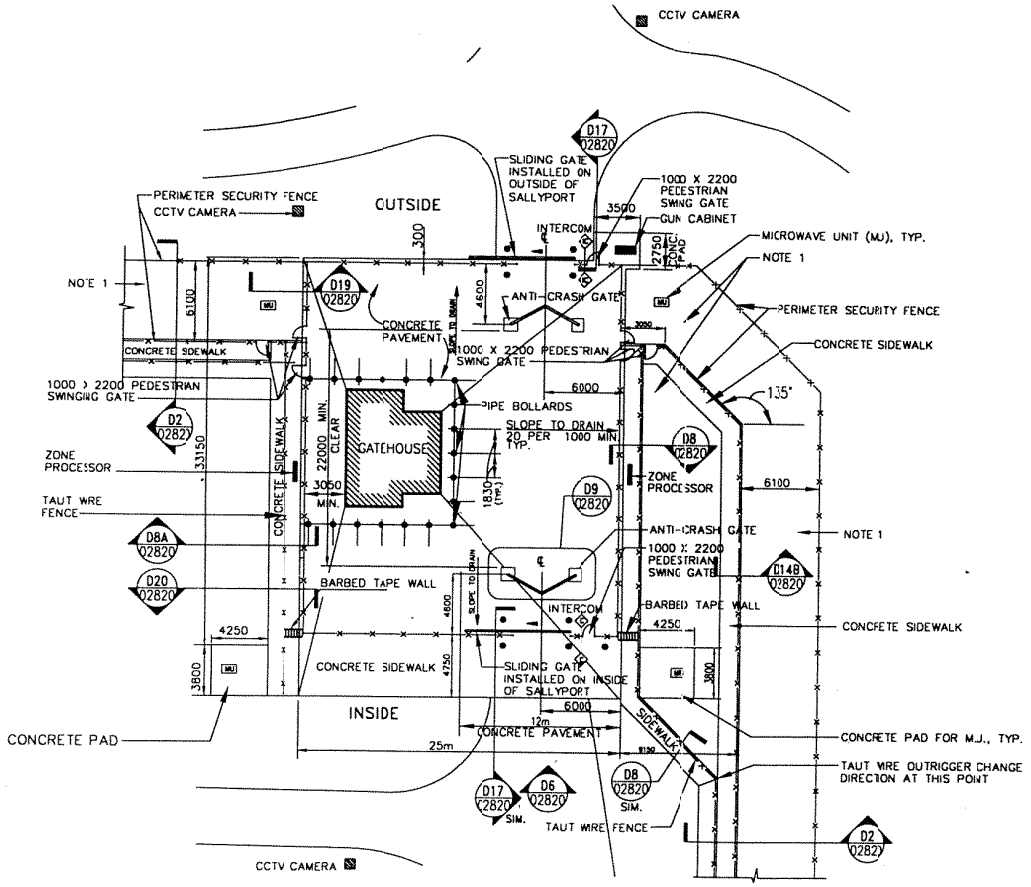


NOTES:

1. BETWEEN FENCES, STERILIZE SOIL & PLACE .15 mm (6 MIL) PLASTIC MEMBRANE BELOW WASHED GRAVEL 100mm DEEP.
2. CONSTRUCTION JOINT FOR SALLYPORT PAVEMENT SHALL BE AT APPROX. 3000mm O.C. EACH WAY U.N.O.
3. CONSTRUCTION JOINT FOR CONC. WALK, REFER TO 02820-D7.

VEHICULAR SALLYPORT PLAN LOW & MEDIUM SECURITY

N.T.S.



VEHICLE SALLYPORT HIGH SECURITY

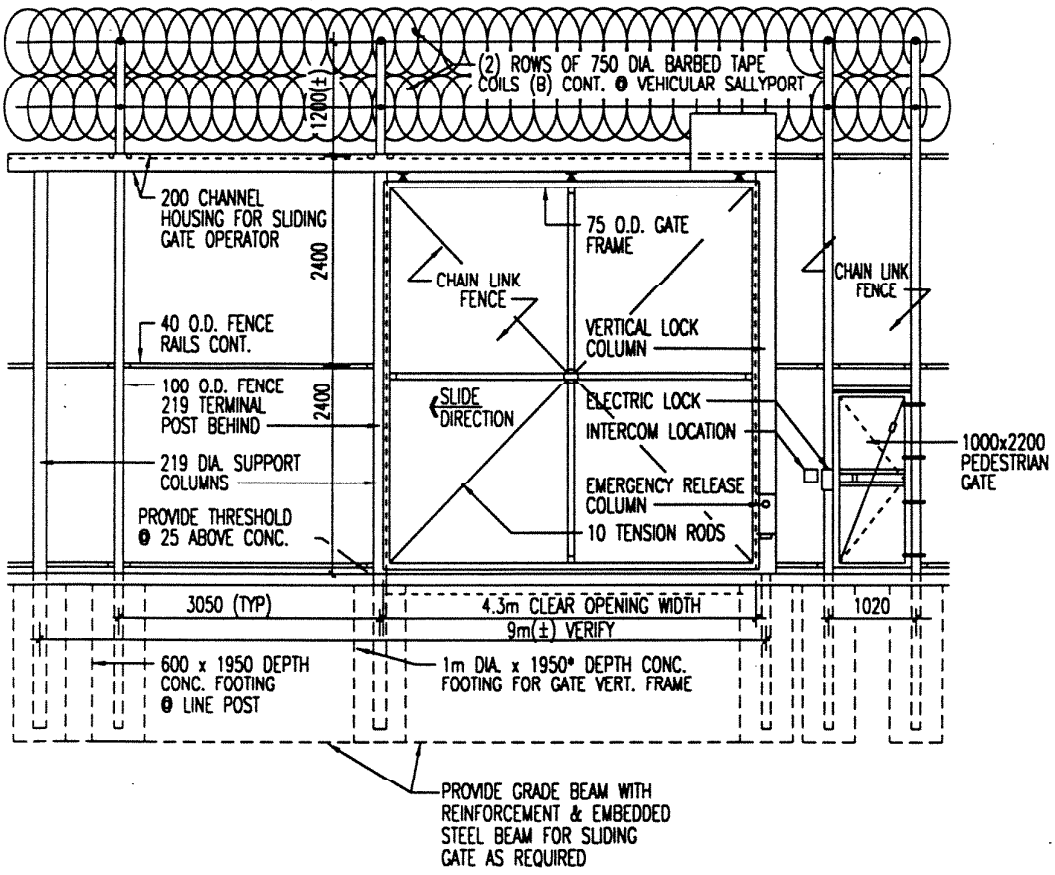
NOTES:

1. BETWEEN FENCES, STERILIZE SOIL & PLACE .15 mm (6 MIL) PLASTIC MEMBRANE BELOW WASHED GRAVEL 100mm DEEP.
2. CONSTRUCTION JOINT FOR SALLYPORT PAVEMENT SHALL BE AT APPROX. 3000 O.C. EACH WAY U.N.O.
3. CONSTRUCTION JOINT FOR CONC. WALK, REFER TO 02820-D7.

ALL DIMENSONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

VEHICULAR SALLYPORT HIGH SECURITY

N.T.S.



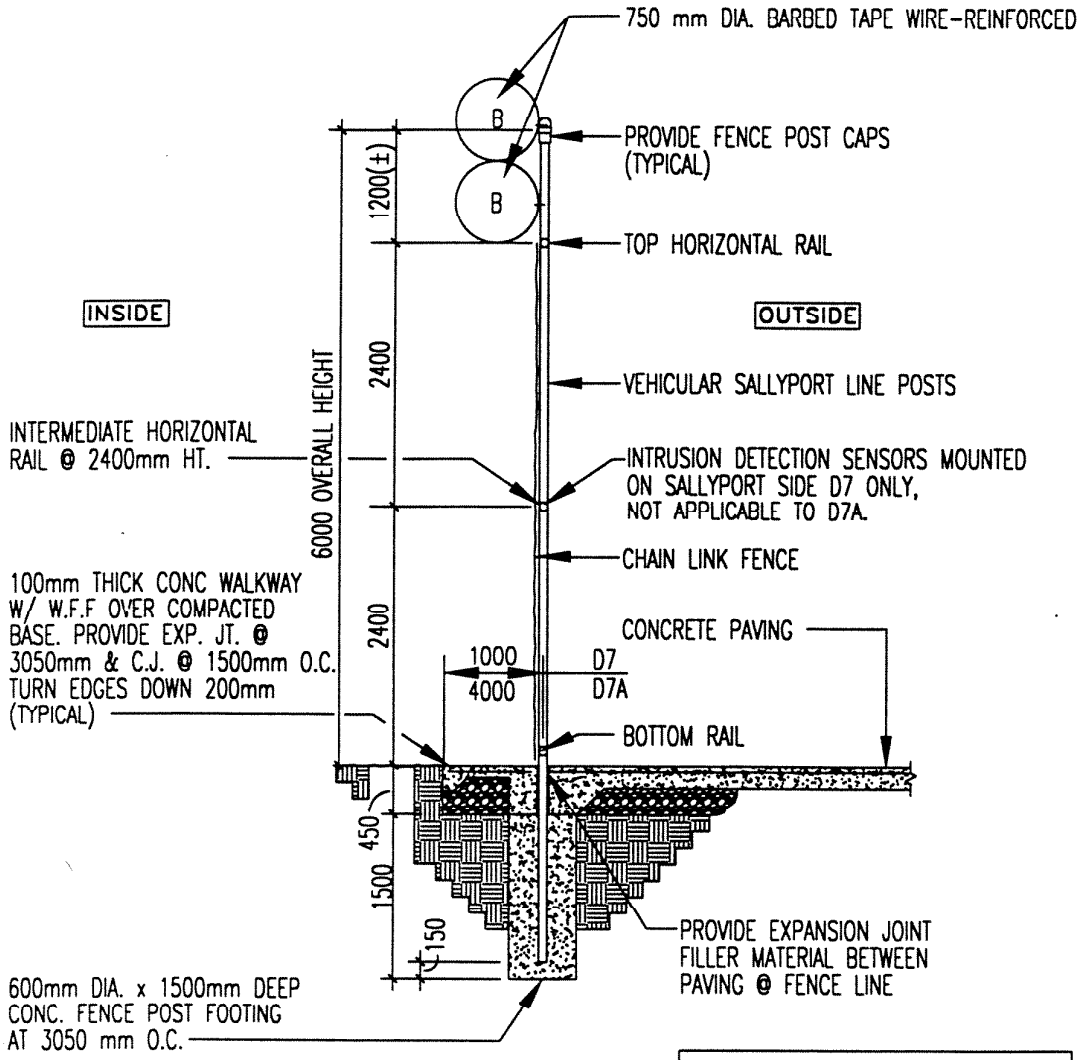
NOTES:

1. * MINIMUM DEPTH BELOW TOP OF CONCRETE PAVING

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

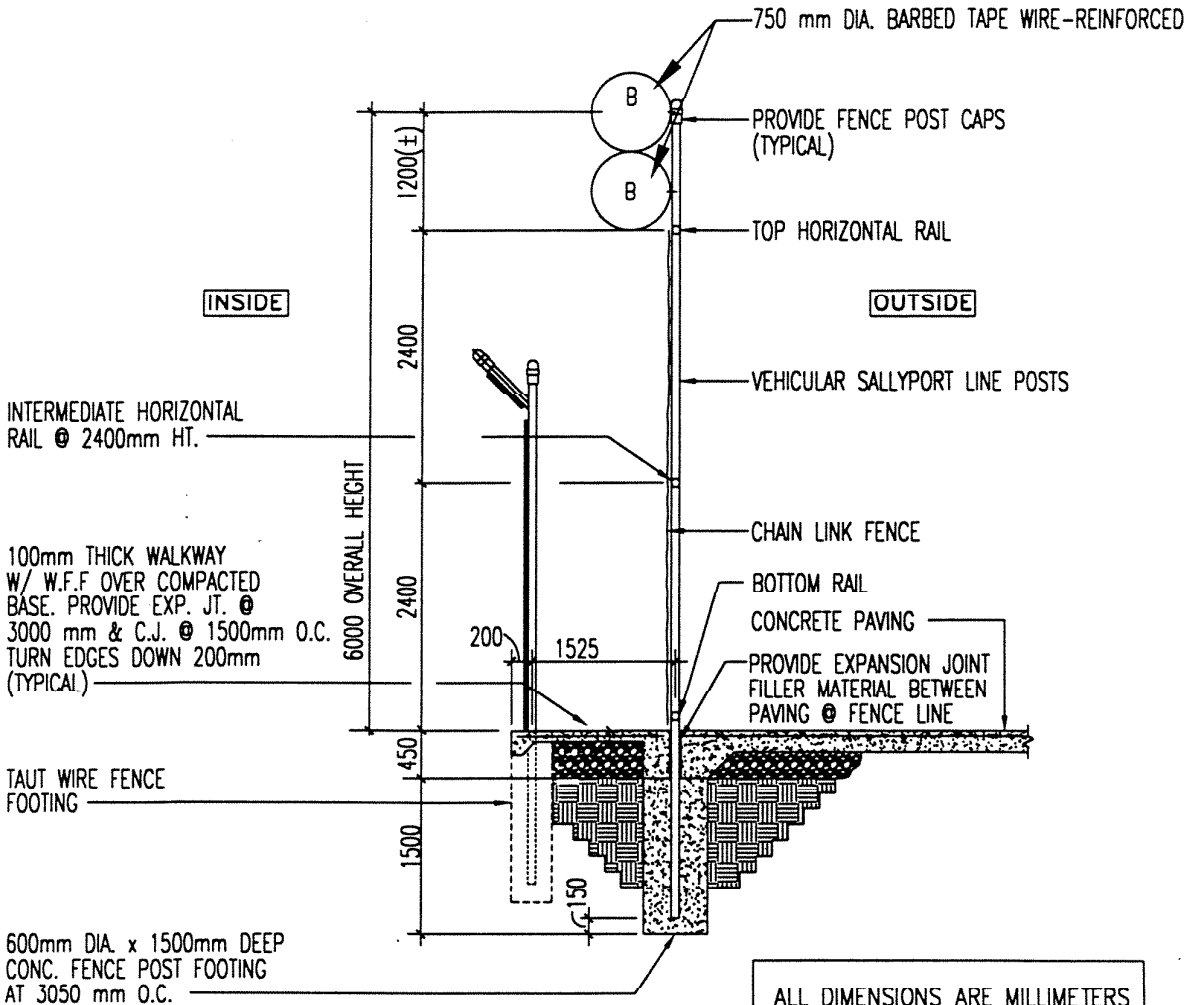
SLIDING VEHICLE GATE

N.T.S.



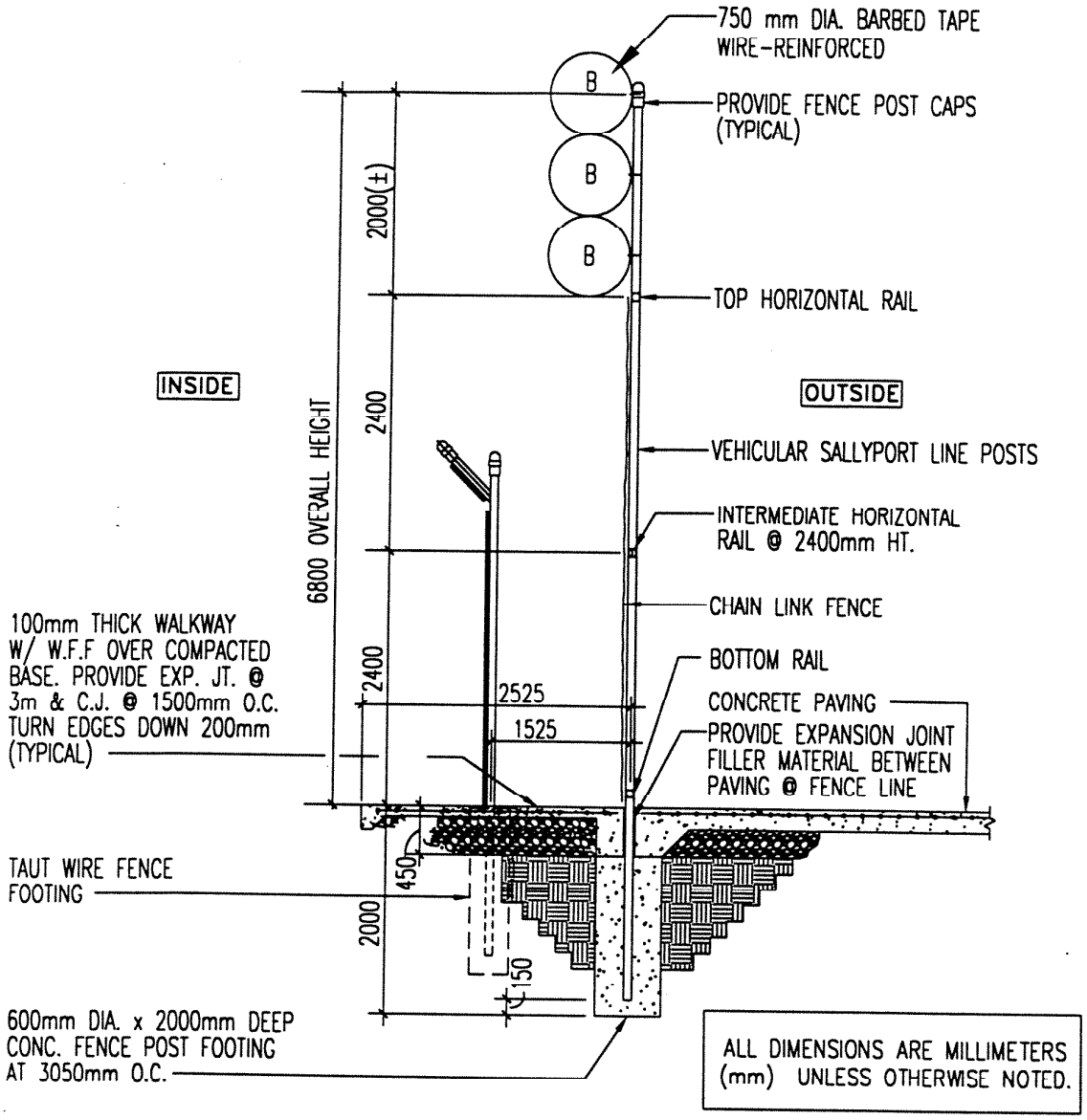
TYPICAL FENCE SECTION @ VEHICULAR SALLY PORT - LOW AND MEDIUM SECURITY

N.T.S.



FENCE SECTION @ VEHICULAR SALLYPORT HIGH SECURITY

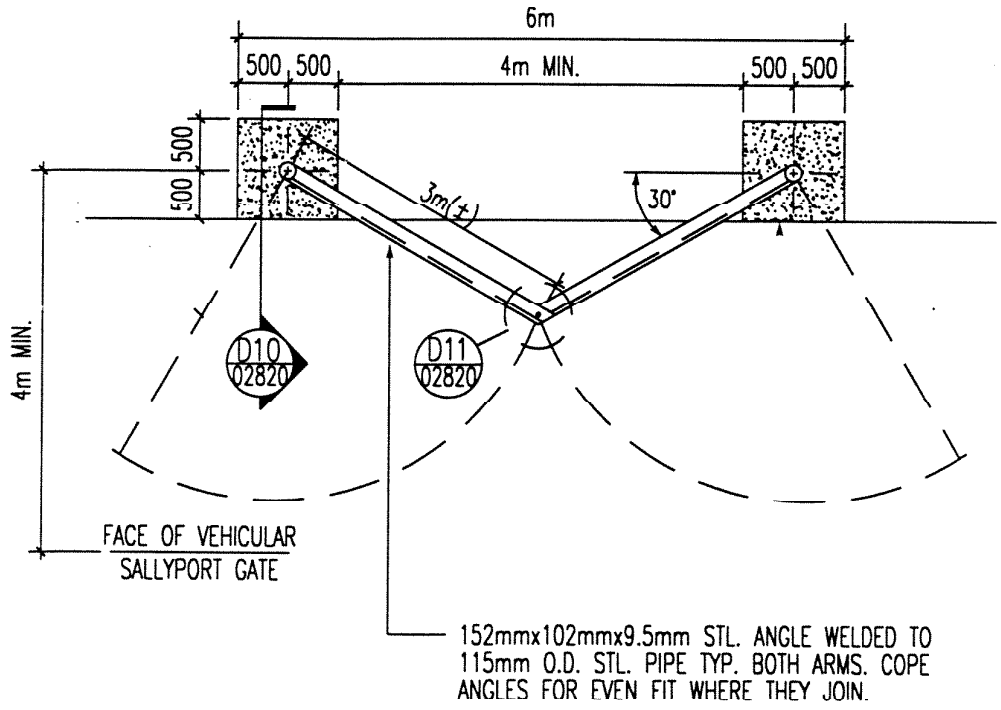
N.T.S.



FENCE SECTION @ VEHICULAR SALLYPORT HIGH SECURITY

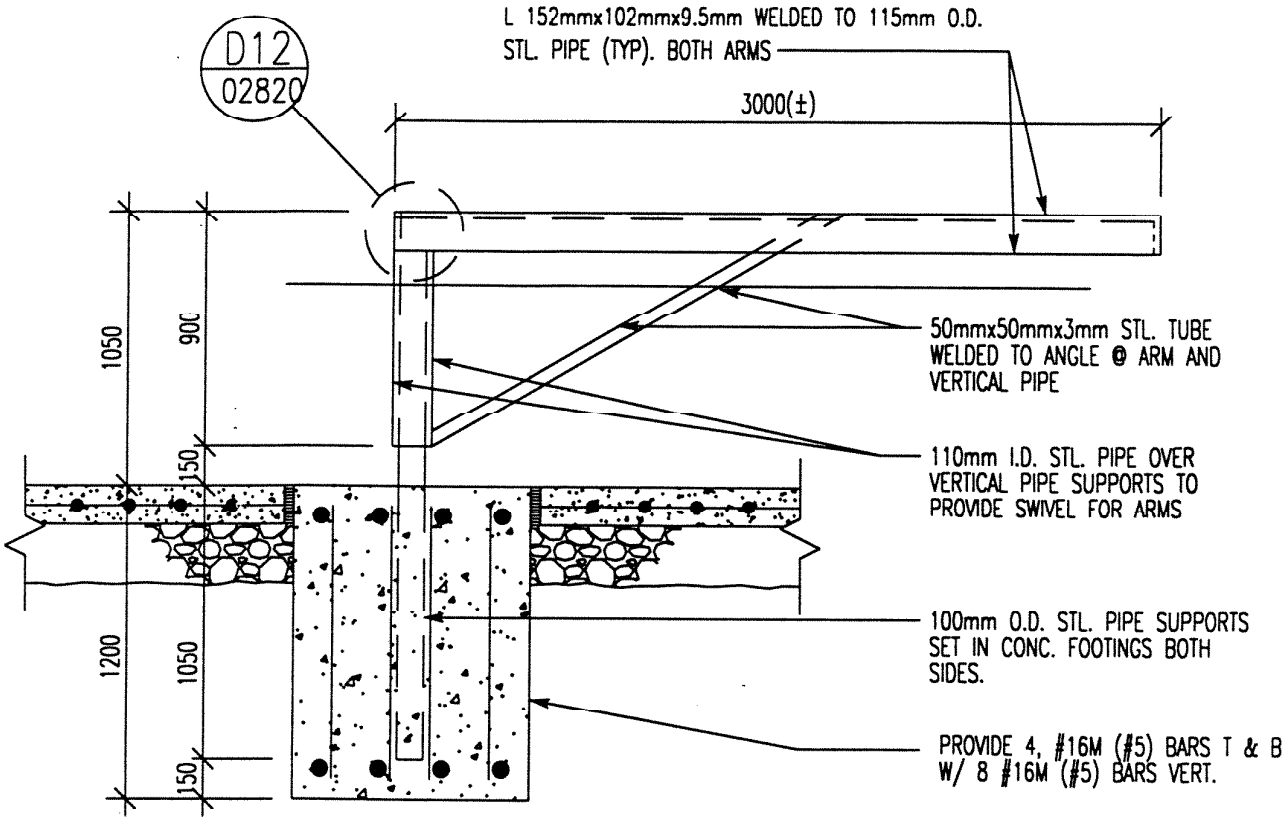
N.T.S.

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.



ANTICRASH GATE PLAN

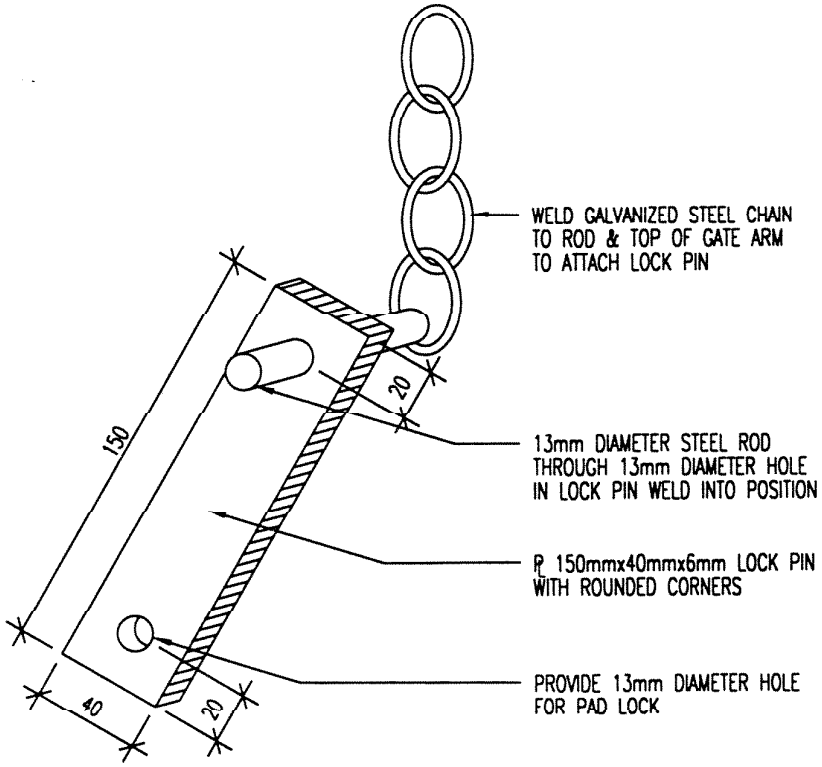
N.T.S.



ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

ANTICRASH GATE DETAIL

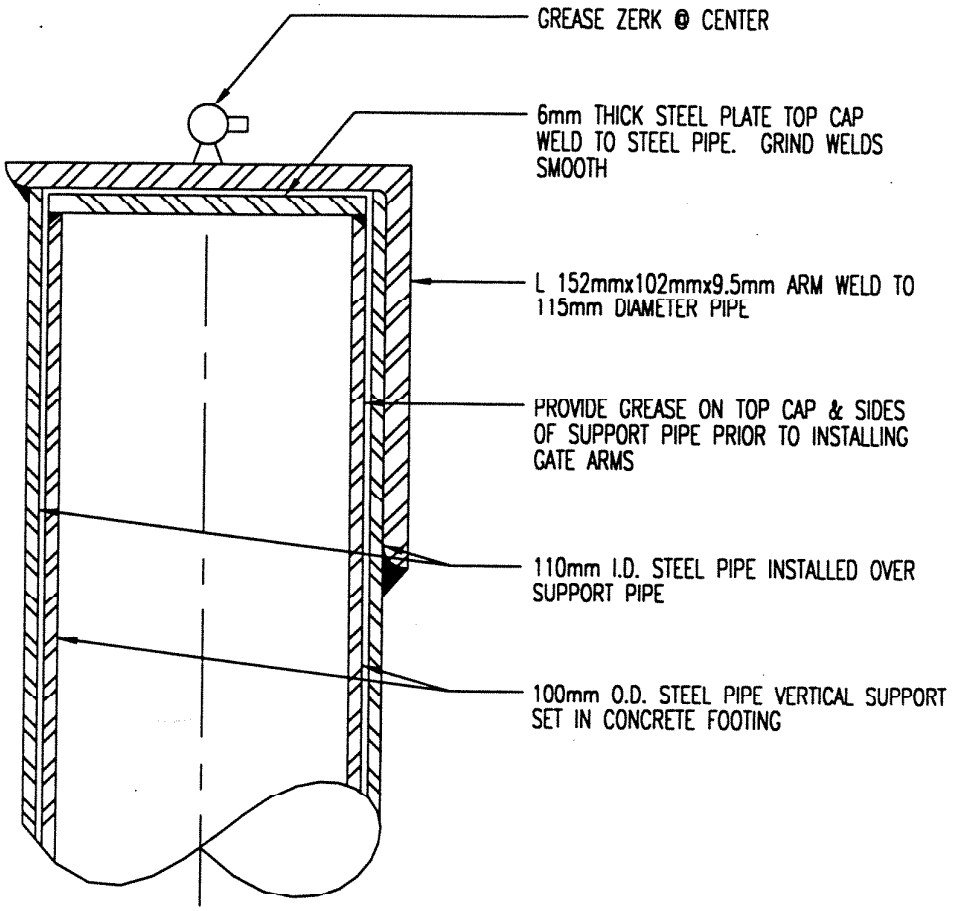
N.T.S.



ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

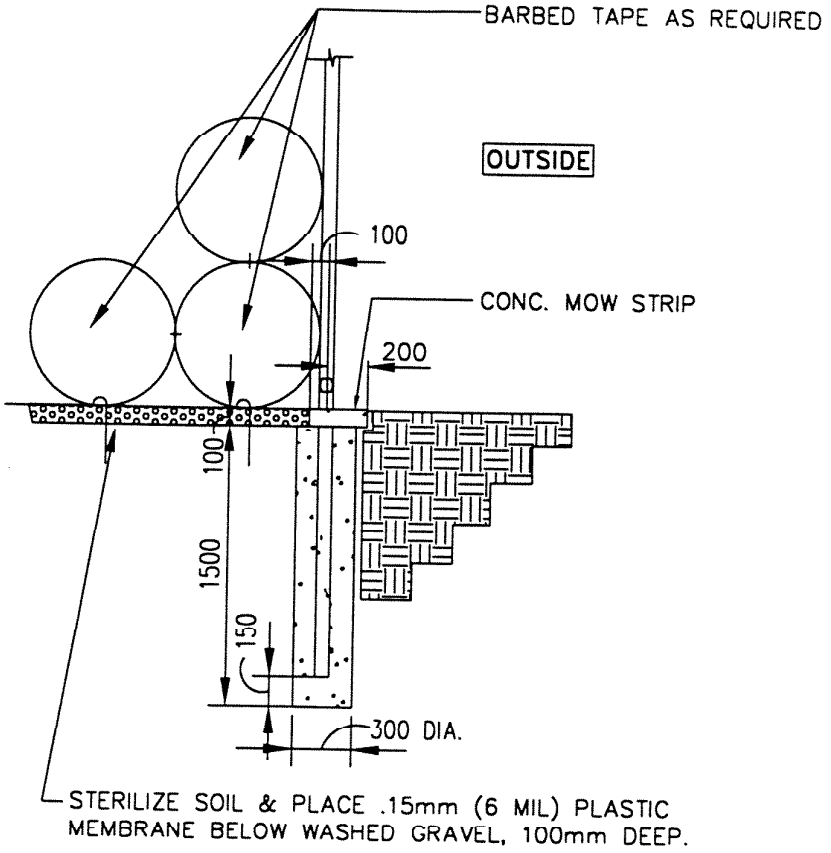
LOCK PIN DETAIL

N.T.S.



GATE ARM MOUNTING DETAIL

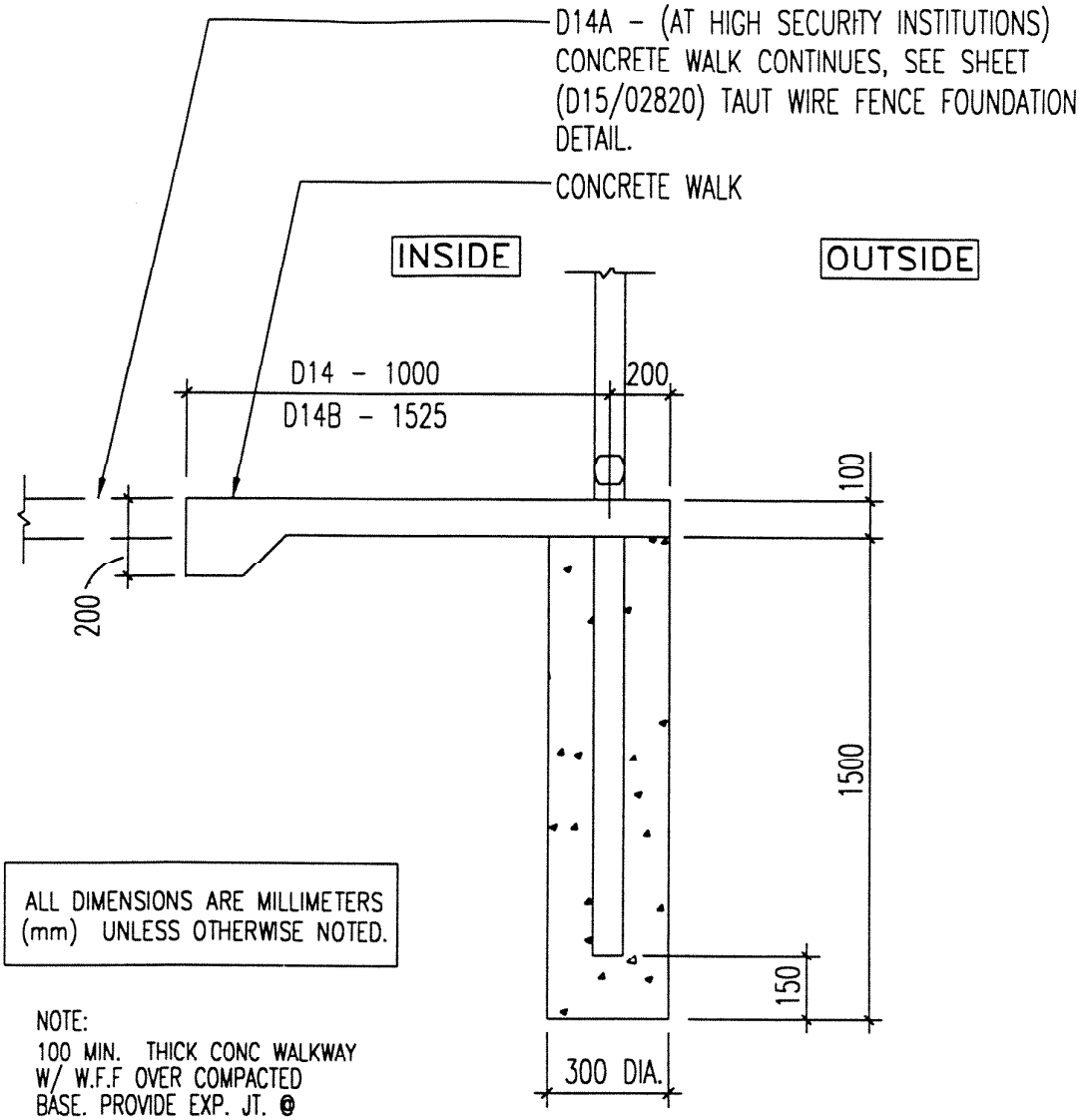
N.T.S.



ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

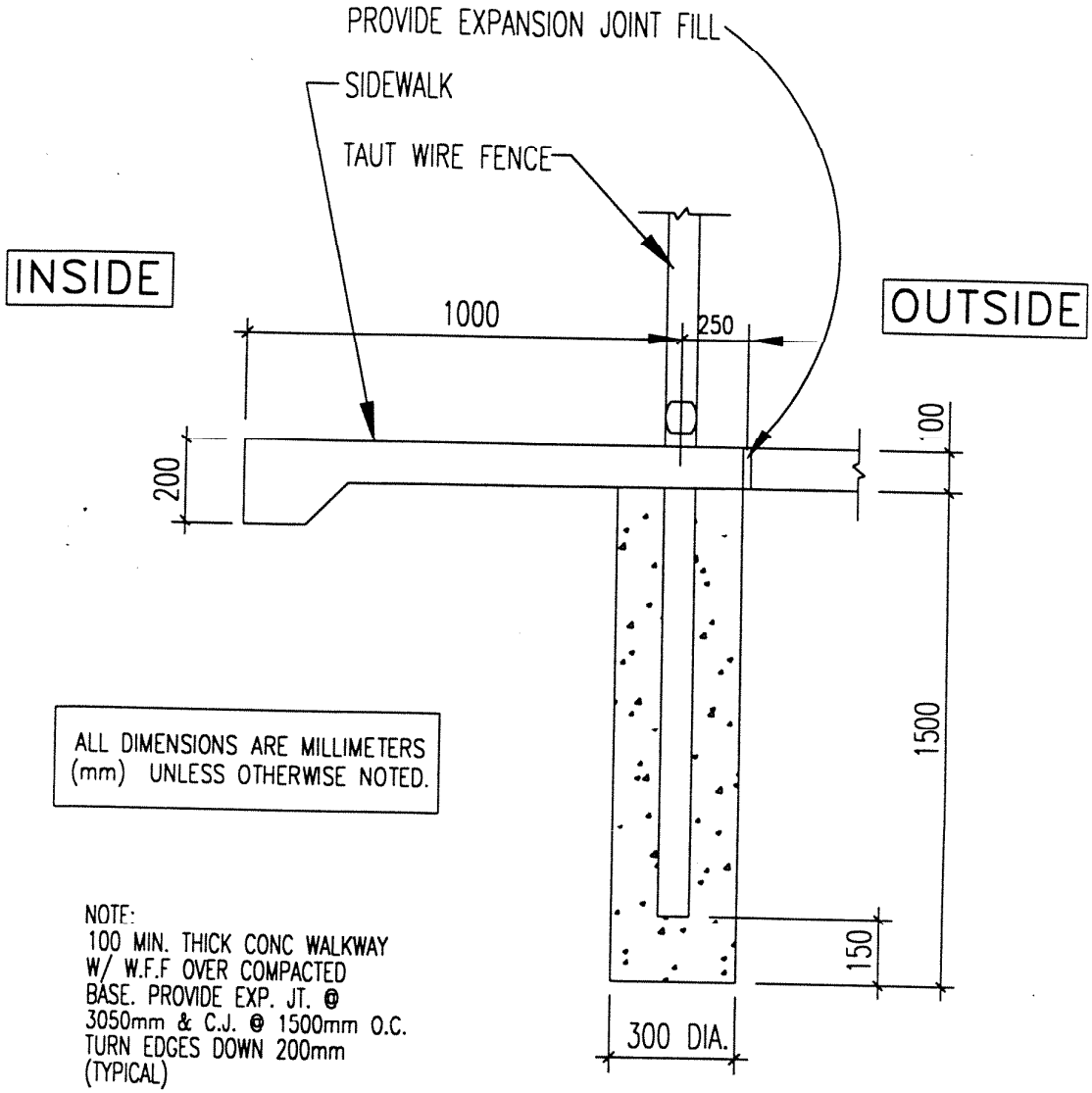
TYPICAL EXTERIOR FOUNDATION PERIMETER SECURITY FENCE

N.T.S.



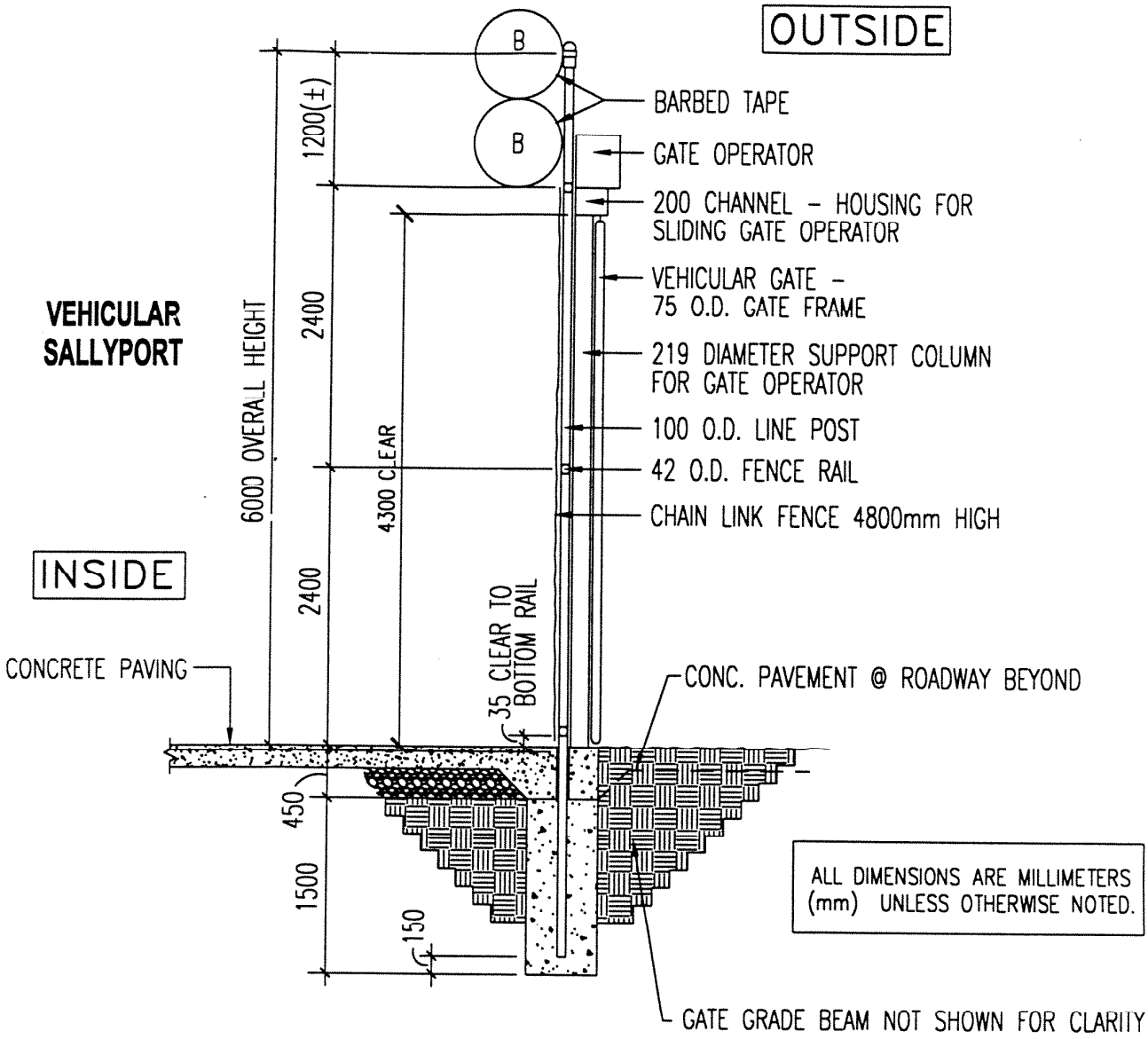
TYPICAL INTERIOR FOUNDATION PERIMETER SECURITY FENCE

N.T.S.



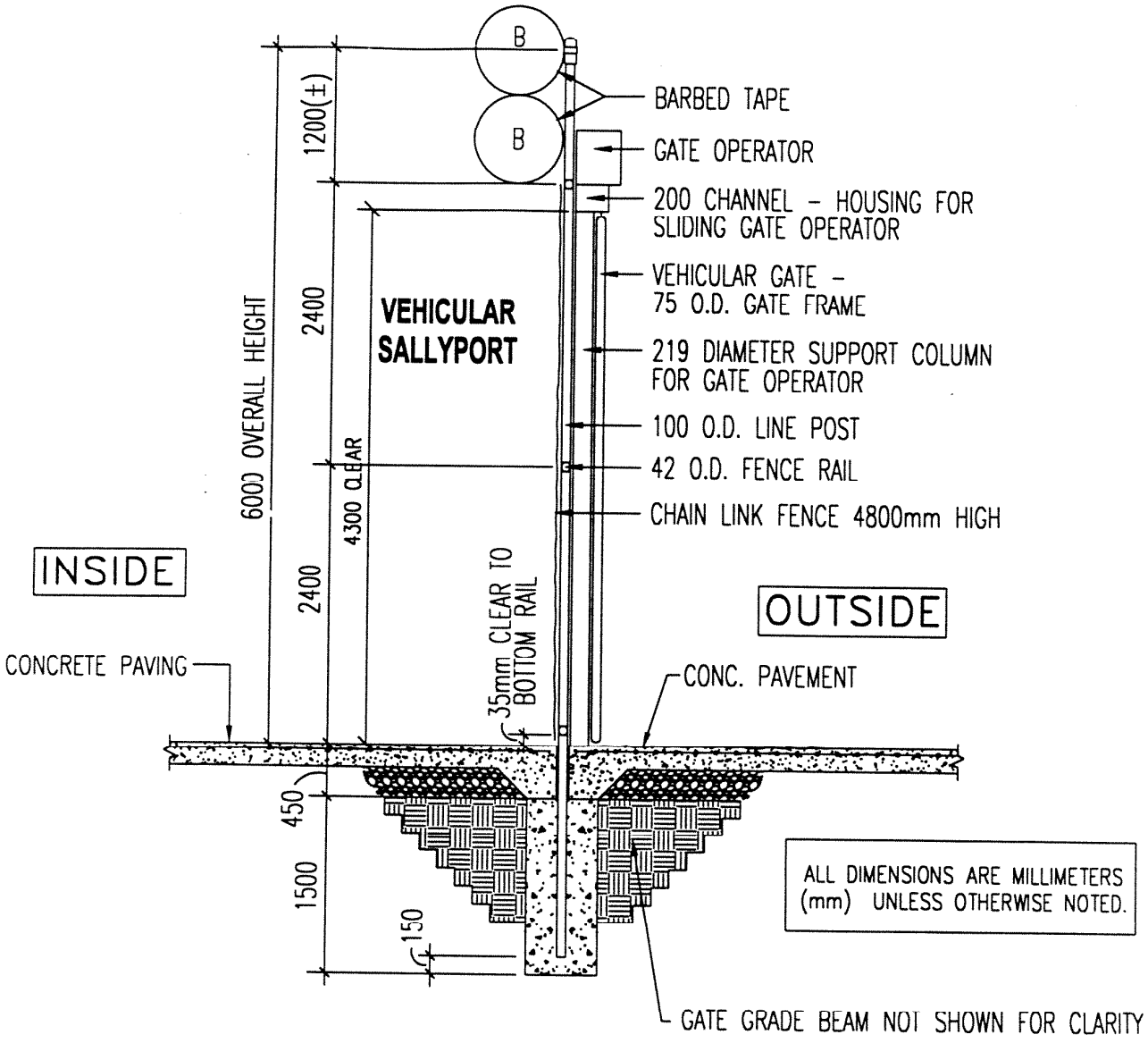
TYPICAL TAUT WIRE FENCE FOUNDATION DETAIL

N.T.S.



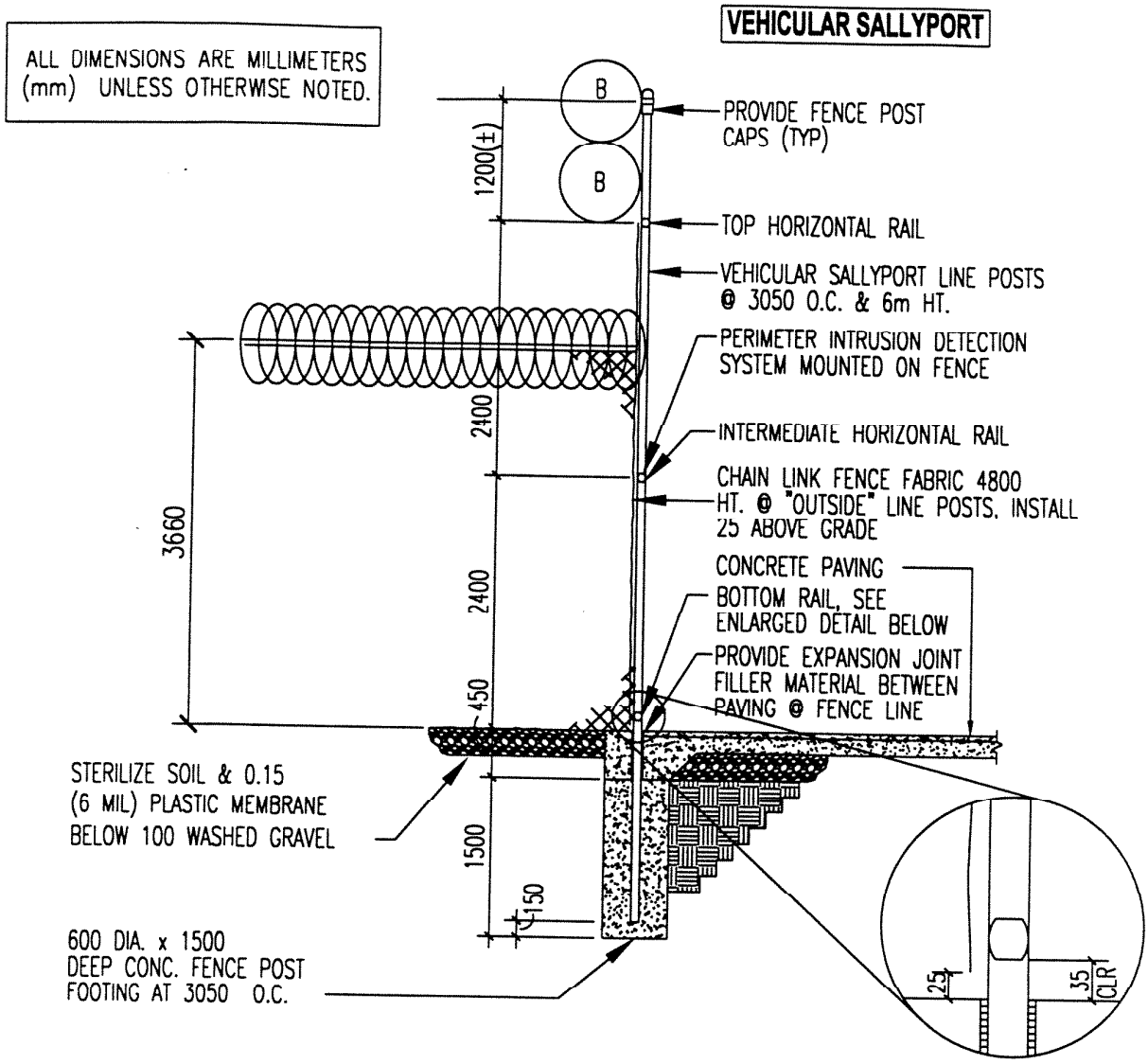
TYPICAL FENCE SECTION @ VEHICULAR SALLYPORT - LOW AND MEDIUM SECURITY

N.T.S.



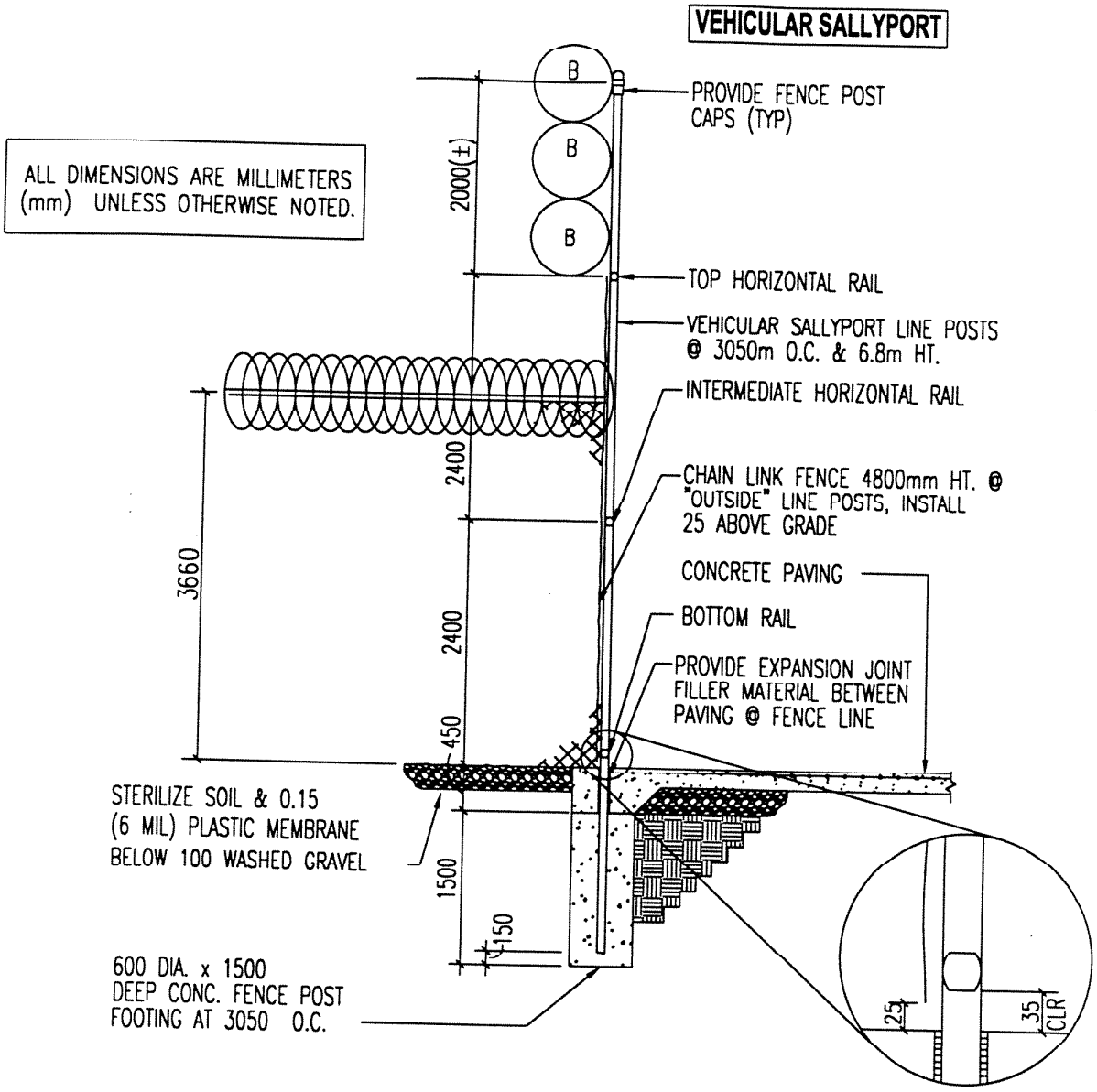
FENCE SECTION @ VEHICULAR SALLYPORT - HIGH SECURITY

N.T.S.



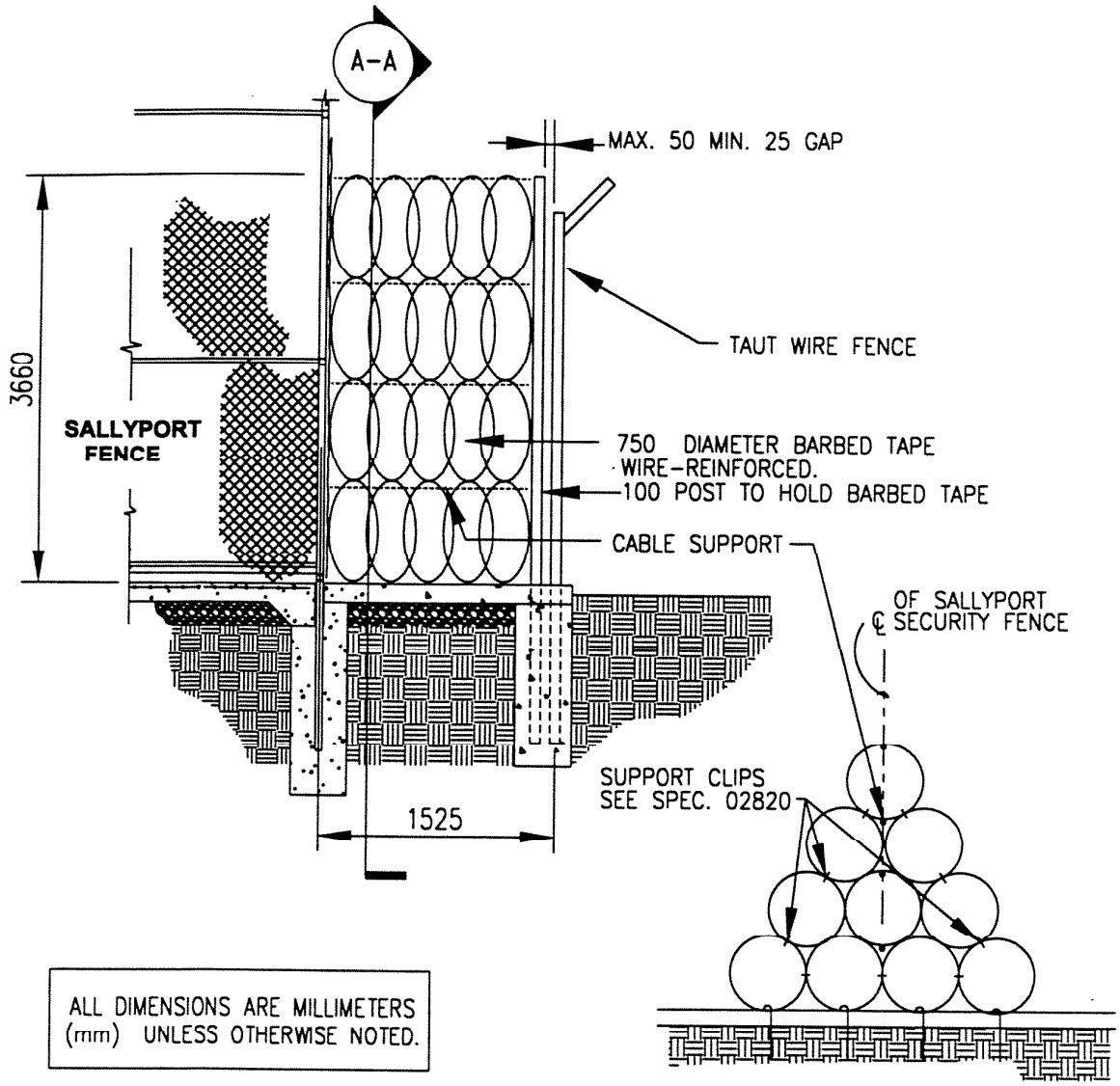
TYPICAL FENCE SECTION @ VEHICULAR SALLYPORT - LOW & MEDIUM SECURITY

N.T.S.



FENCE SECTION @ VEHICULAR SALLYPORT - HIGH SECURITY

N.T.S.

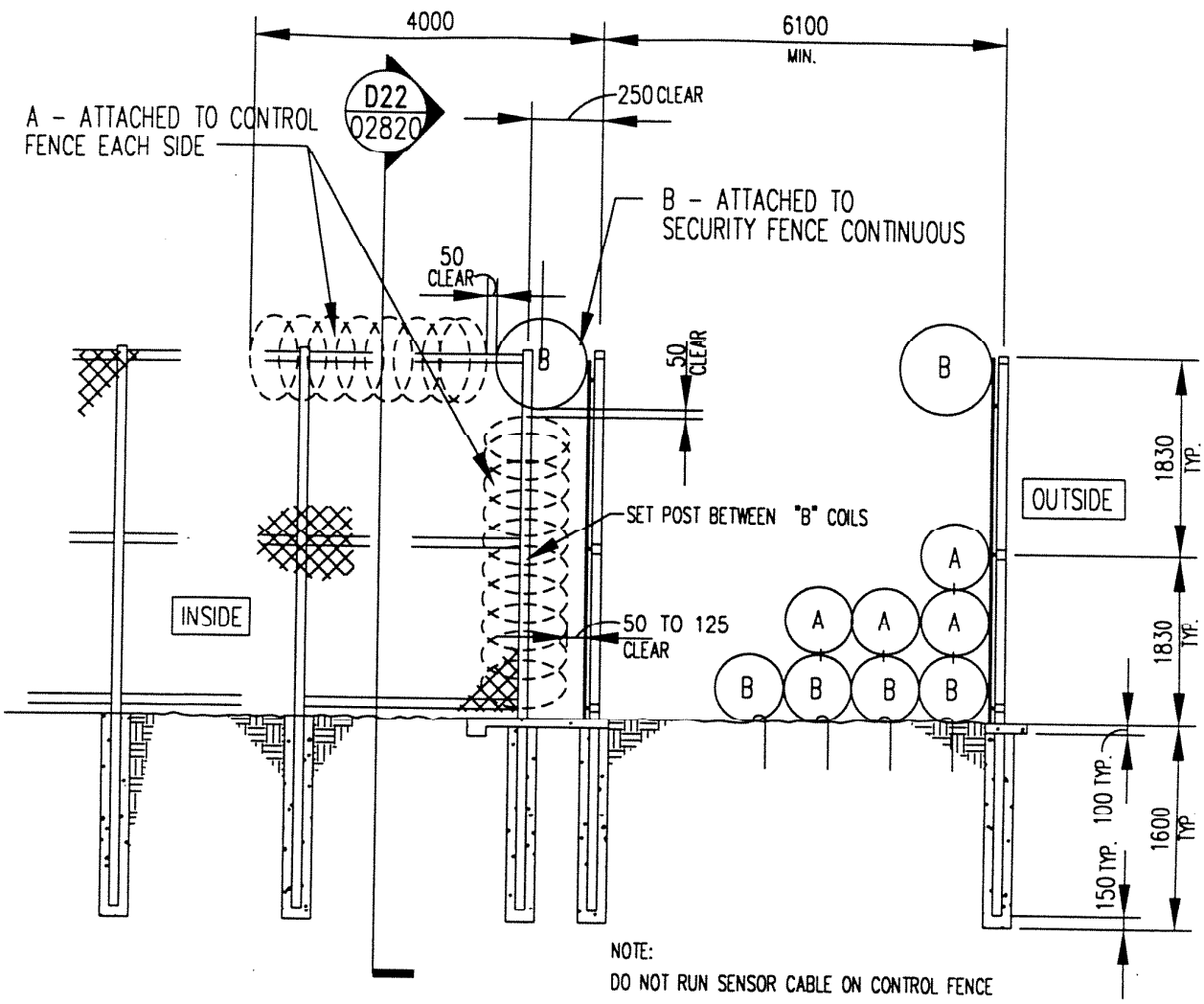


SECTION A-A

N.T.S.

BARBED TAPE WIRE DETAIL

N.T.S.

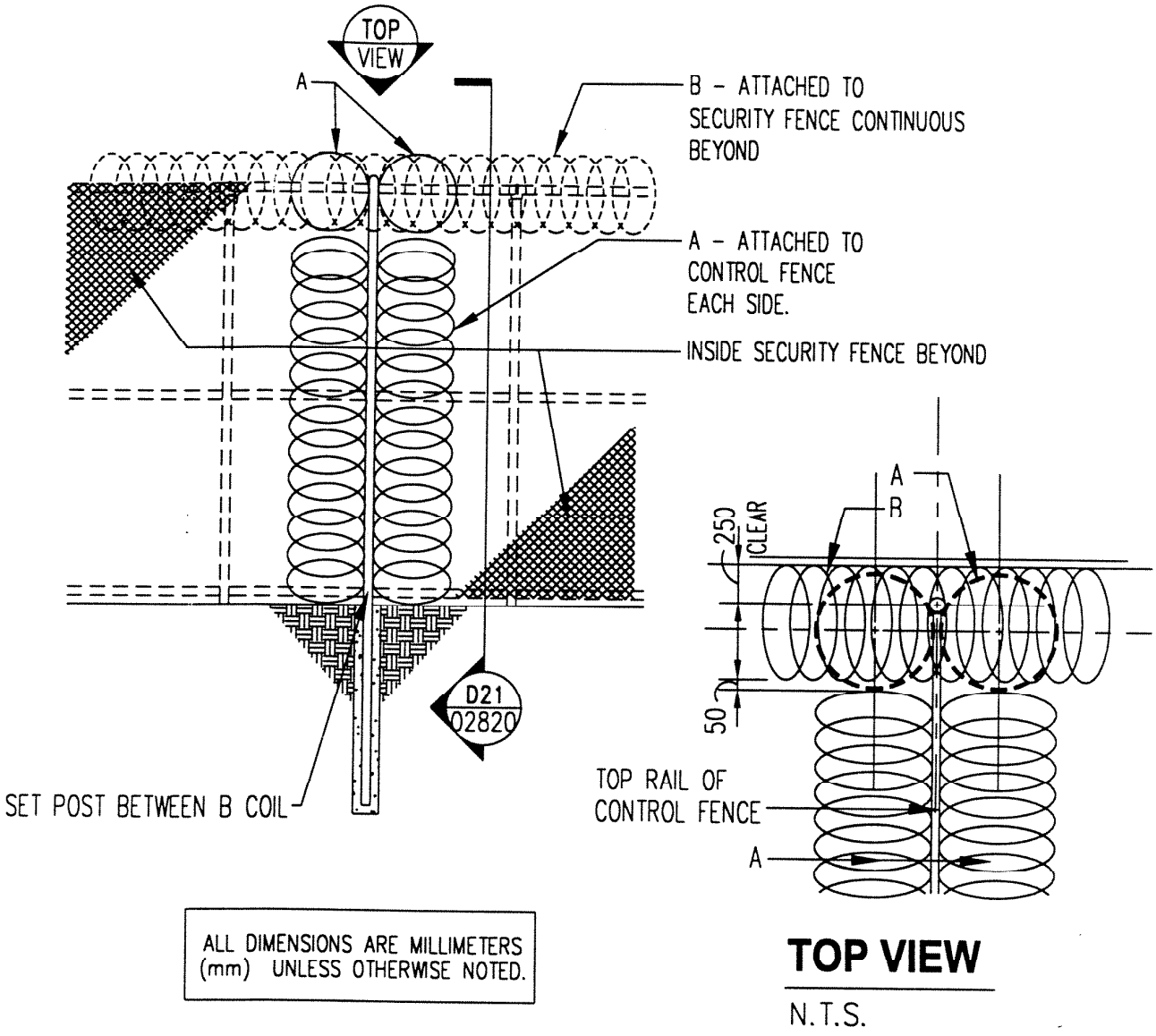


ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

SECURITY COILS
A - 750 Ø BARBED TAPE NON-REINFORCED
B - 750 Ø TAPE WIRE-REINFORCED

TYPICAL SECTION @ CONTROL FENCE - LOW & MEDIUM SECURITY

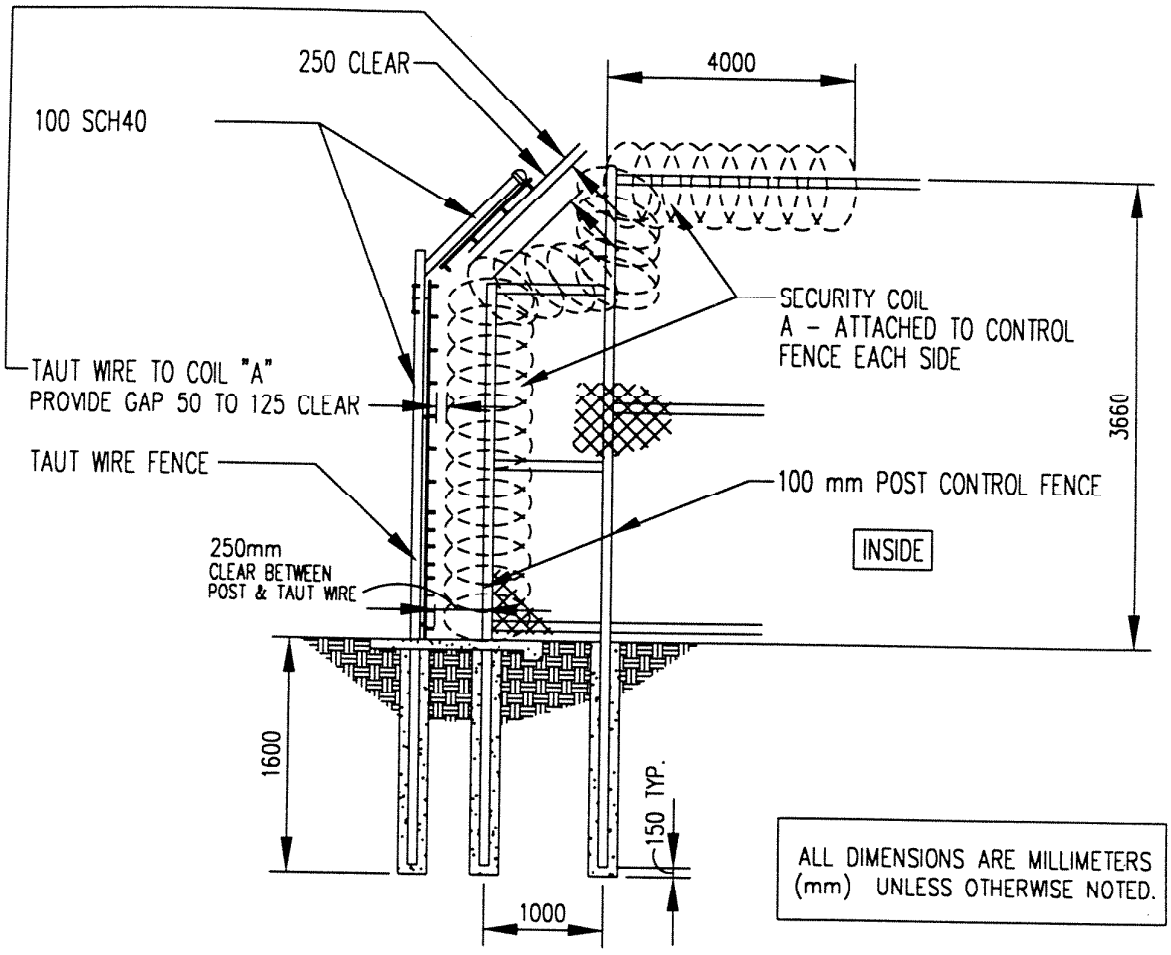
N.T.S.



ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

TYPICAL SECTION @ CONTROL FENCE - LOW & MEDIUM SECURITY

N.T.S.



TYPICAL SECTION @ CONTROL FENCE - HIGH SECURITY

N.T.S.

SECTION 02835 - BARBED TAPE

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes barbed tape barrier to be installed with perimeter security fence.

B. The barbed tape will be provided by the Government, to be installed by the Contractor.

1.2 REFERENCES

A. ASTM A 478 - Standard Specification for Chromium-Nickel Stainless and Heat-Resisting Steel Weaving and Knitting Wire.

B. ASTM A 585 - Standard Specification for Aluminum-Coated Steel Barbed Wire.

1.3 SUBMITTALS

A. Product Data - Include manufacturers' data, specifications and installation instructions for all components, materials and accessories.

B. Shop Drawings - Include layout indicating plan, section and details illustrating layout and arrangement and erection procedures as per recommendation by manufacturer.

PART 2 - PRODUCTS

2.1 NON-REINFORCED BARBED TAPE

A. Barbed tape coils shall be 750 mm (30") in diameter. Tape shall be fabricated from spring quality austenitic stainless steel, minimum hardness of Rockwell (30 N) 50-55, nominal 6 mm (0.24") thick, nominal 30 mm (1.210") width prior to fabrication. Clusters of four barbs having a maximum tip radius of 0.127 mm(0.005") shall be punched 100 mm (4") on center. Barb cluster width shall be 30 mm. Barb clusters shall have a minimum length of 30 mm (1.2"). Barb shall be alternately offset from the tape center line 4 - 12 mm (0.15"-0.45"). Adjacent coiled loops shall be alternately clipped together or spot welded at five points of approximately equal radius spacing about the coil loop perimeter. Clips shall survive a 890N (200 lb.) force loaded uniformly about the periphery of the coil. Welded attachments shall withstand a minimum pure tensile circumference preventing any slippage of one past another at the point of attachment. Clips shall be

fabricated from approximately 2 x 7 mm (0.065"x0.275") stainless steel. The 750 mm (30") diameter coils and five point uniform radial connections shall interact to produce a concertina coil with a 300 mm (12") opening between adjacent coil loops.

2.2 WIRE-REINFORCED BARBED TAPE

A. Barbed Tape Coils shall be 750 mm (30") in diameter. Tape shall be fabricated for ASTM 478 Stainless Steel strip hardened to Rockwell (30 N) 40-50, 6 mm(0.24") thick, 25 mm (1") width prior to roll forming. Clusters of 4 barbs having a maximum tip radius of 0.127 mm (0.005 inch) shall be punched 100 mm(4") on center. Barb clusters shall have a minimum length of 30 mm (1.2"). Barbs shall be alternately offset from the tape center line 4 - 12 mm (0.15"-0.45"). The stainless steel strip shall be permanently cold clenched around a 2.5 mm (0.098") diameter austenitic stainless core wire having a minimum tensile strength of 895 MPa (130 ksi). The barbed tape shall have a minimum 230 degree wrap about the core wire. Concertina clips placed around the circumference of the tape shall be such that adjacent loops are rigidly fixed, preventing any slipping of the past another at the point of attachment. Clips shall be fabricated from 1.6 x 9.5 mm (0.065"x0.375") stainless steel and capable of withstanding a pull of 890N (200 lb.).

2.3 INSTALLATION TIES

A. The Contractor shall use one of the following methods:

1. Wire Ties used to attach security coils to the fences shall be austenitic stainless steel, 175 mm (±25 mm long), [(7" ±1" long)], 1.2 mm (18 gauge) thick, twistable ties. No less than three ties shall be used for each 300 mm (1 ft) of installed length of barbed tape used. The wire shall have 3 complete twists.

2. "Hog Rings" used to attach security coils to the fences shall be 13 gauge stainless steel and shall be used to fasten barbed tape to chain link fabric, tension wire, and barbed tape. No less than three "hog rings" shall be used for each 300 mm (1 ft) of installed length of barbed tape.

2.4 GROUND STAKES

A. Ground stakes will be #10M (#3) galvanized reinforcing rods 450 mm (± 25 mm) [(18" ±1")] long with a 180° end hook 125 mm (5") in length.

2.5 BARBED WIRE

A. Barbed wire shall be two-strand, 3 mm (0.12") thick, Class 3, meeting the requirements of ASTM A585. Barbs shall be four-point 2.5 mm (0.1") thick

aluminized wire interwoven and spaced 100 (4") to 150 mm (6") apart.

PART 3 - EXECUTION

3.1 INSPECTION

A. Surface Conditions - Prior to work of this Section, carefully inspect the installed work of other trades and verify that such work is complete to the point where this installation may properly commence.

B. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

C. Proceed with work following placement of herbicide and gravel between security fences.

3.2 INSTALLATION

A. General - Install work of this Section in accordance with the manufacturer's recommendations as approved by the Contracting Officer.

B. Drive ground stakes to a depth of 300 mm (12") at ends of each roll and at 3600 mm (12') o.c. maximum between ends. Connect ground stake to bottom of each roll with stainless steel wire ties.

C. Attach rolls to security fencing with stainless steel wire ties at 300 mm (12") o.c. Install high rolls to ensure rolls do not bounce in the wind. Add additional ties as necessary.

D. Attach ends of rolls to each other with stainless steel wire ties at a minimum of 5 points around the perimeter circumference of the roll. Attach points shall correspond to attachment points within the roll. Rolls that are not supported by either ground stakes or security fencing shall be attached to adjacent rolls; next to, underneath and above at a minimum of 1200 mm (4') o.c.

3.3 INSPECTION

A. The completed installation shall be inspected and approved by an authorized manufacturer's representative. Provide a certificate of compliance to the Contracting Officer indicating the installation meets or exceeds the manufacturer's written requirements for the application shown. Correct improperly installed work.

END OF SECTION